Municipal Journal
And Engineer

VOLUME XXX. NEW YORK, FEBRUARY 1, 1911 No. 5

LOCATING SUBSURFACE STRUCTURES

Work Done by Division of Substructures of Brooklyn, N. Y.—Method of Making Field Measurements—Value of Existing Records—Method of Mapping and Filing Records—Value of the Work

About 1905, when the Board of Estimate and Apportionment of New York City was considering the matter of municipal conduits for carrying fire, police and other wires, it was proposed to appropriate $25,000 for the purpose of surveying and mapping the substructures of those portions of the city where it might be desirable to locate the conduits. This idea met with some opposition, the chief argument against it being that, in conformity with the other powers and duties vested in the Borough Presidents, this work also should be in their charge. This left each president to follow practically his own ideas in obtaining such information.

The president of the Borough of Brooklyn determined upon the organization of a Division of Substructures, and on Sept. 14, 1906, the Board of Estimate and Apportionment approved an appropriation of $10,000 for this purpose, which fund became available for use about October first. During the remaining three months of that year such a bureau was organized by Assistant Engineer (now Engineer) Morton L. Fouquet, who was placed in immediate charge of the work, and who has continued in charge until the present time. An appropriation of $16,000 was made in the budget for the year 1907 for this work, and $23,000 for the year 1908. In 1908 the regularly organized force consisted of six in the field and five in the office.

During the four years since the division began actual work the force, which was selected with particular care, has remained practically unchanged, although somewhat reduced during the past year. This is very fortunate, since the work is in many ways more difficult than ordinary surveying, and the present force has developed an aptitude for it which it would be difficult to duplicate in a new or largely new set of men. With this force and with the work confined to the older and more congested section of the borough, approximately seventy-five miles of streets have been covered and the record maps for this area practically completed. In addition a mass of information has been accumulated covering other sections of the borough for future utilization.

So far the expenses of the division have been met entirely by appropriations. Ever since 1907 the board of aldermen has been requested to authorize the borough president to establish a schedule of fees to be paid by applicants for information, and an ordinance approved by the corporation counsel has been in the hands of the aldermen since early in 1909; but so far permission to make these charges has not been granted. The rates provided for in the ordinance are 8 cents per linear foot where a survey is necessary, and 5 cents where the information can be obtained from the office records alone, where the permit is for a structure 300 ft. in length; the minimum charge being $5 where there is no field work and $10 where field work is required. Where there is a continuous run of substructure of between 300 and 2,500 ft. the fee would be 5 cents a linear foot; and where more than 2500 ft. 5 cents for the first 2500 and 3 cents per foot beyond that length. These charges are believed to be very moderate and very much less than it would cost the corporations to obtain less exact information in any other way. They are based on the charges made for similar information by the corresponding department in the city of Philadelphia, which for 25 years has been accumulating information and performing services similar to those undertaken by the Brooklyn Division of Substructures.

As in the great majority of cities there were, previous to the organization of this division, no complete official records of the location of the various water and gas mains, sewers, wire conduits, steam heating pipes, pneumatic tubes and other continuous structures, nor even of the vaults and tunnels constructed by abutting property owners. Those owned by private corporations were supposed to have been placed under a license issued by the city and to have brought more or less revenue to its treasury; but the city had no record of where such structures were located, or even of what structures might have been placed in any given street. Perhaps the greatest service rendered by this division is the possibility which its records offer of locating in advance the exact position which water mains or other structure can take in a street already crowded with similar structures. The previous practice had been for the city department or private corporation which intended placing a pipe or conduit in a given street to dig test pits at intervals of about a block or two throughout the proposed route in order to learn where it would be possible to locate such structure. Prior to the laying of the new high-pressure water mains in Brooklyn over 300 test pits were dug in the most congested part of the city, where they occasioned the greatest interference with traffic and deterioration of pavements, etc. Moreover, the information thus obtained by one corporation was seldom available for another and a duplicate series of test pits might be dug in the same street a few years later. This was not only very expensive, frequently costing thousands of dollars in connection with a single line of conduit, but was very detrimental to the pavement, which had to be broken in the digging of these test pits.

Not only was it true that the city was not acquainted with the location of private structures, but a great many of those built and operated by itself were but indefinitely or incorrectly located on the official plans. In a great many cases it was found that there was no reliable information as to where was located the pipe connecting a catch basin with the sewer, and the Division of Substructures sent men into the sewers and at the same time discharged water from fire hose into a catch

basin in order to determine where the point of discharge from this might be. With the information now made available, the president of the borough is enabled to regulate intelligently the granting of revocable consents and permits and exercise the authority vested with him of regulating and controlling all street openings in which definite locations for new work about to be undertaken can be so determined as not to conflict with existing substructures; and further space can be reserved in the streets for any contemplated municipal work.

A careful study was made of methods pursued in other cities in accumulating and mapping subsurface data, and the system adopted is in part the Philadelphia system, where a bureau of this character has been in existence for some twenty odd years and the information accumulated has proved of great value to the municipality.

Concisely put, the duties of the division are as follows:

DUTIES OF DIVISION OF SUBSTRUCTURES.

Accumulating all information obtainable by surveys and investigations as to the size, location and character of structures under the streets and avenues in the borough, and recording the same on durable maps.

Assigning definite locations for new substructures.

Reducing pavement mutilations to a minimum.

Conserving, as far as possible, for future utilization, subsurface spaces which are rapidly becoming one of the city's most valuable assets, and from which substantial revenues will be derived through future franchise grants.

Furnishing to applicants seeking subsurface space for tunnels, pipe lines, etc., information as to the location and size of existing substructures. Such information is required by the Board of Estimate and Apportionment when applications are filed for franchises.

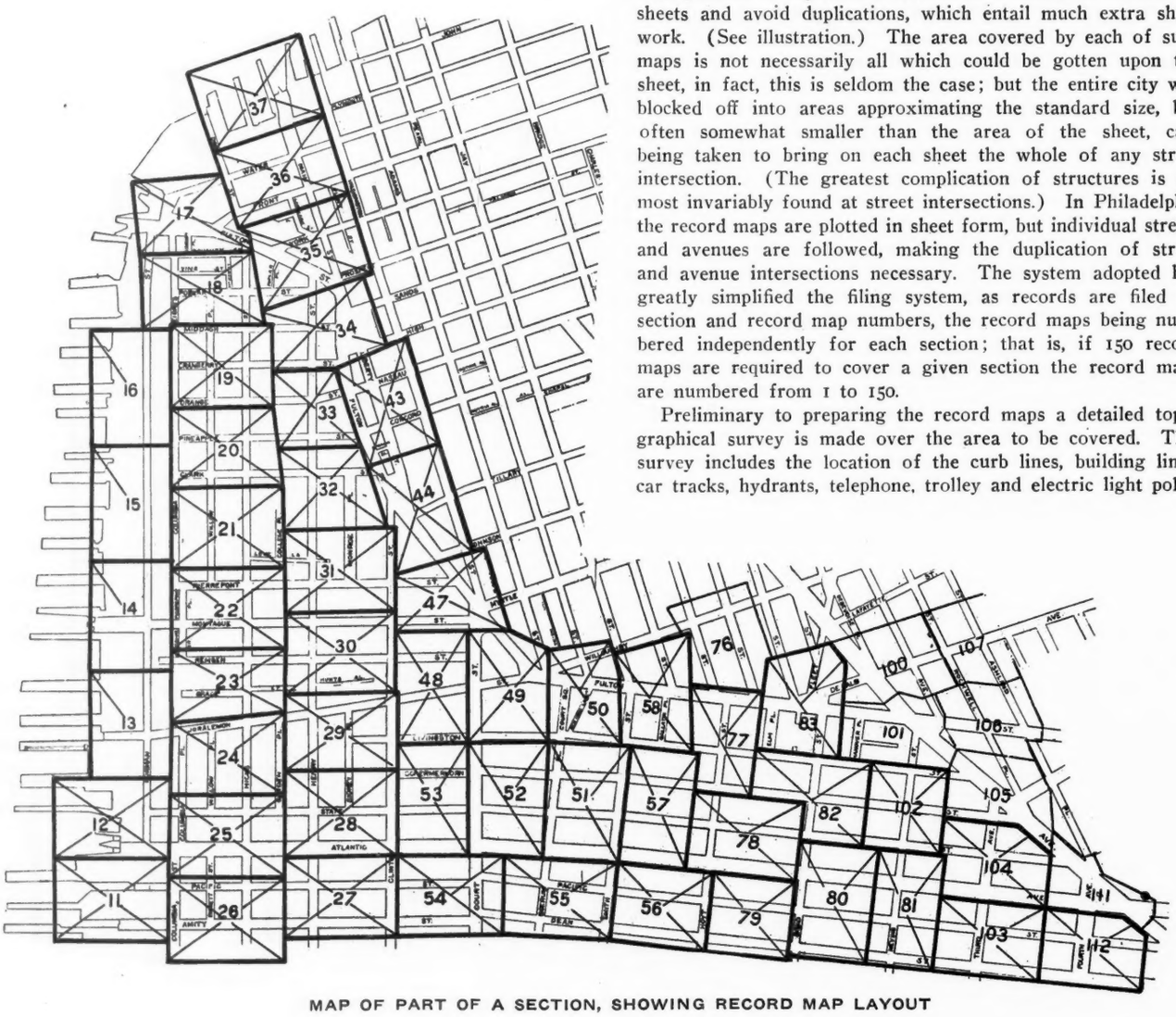
Furnishing other city departments with information to be used in connection with the location and construction of subways, sewers, water mains, etc.

The exaction of a moderate fee for information furnished to private individuals and corporations, the authority for which is to be covered by an amendment to Section 92, Code of Ordinances, now in the hands of the board of aldermen for adoption, thereby placing the division on a revenue earning basis similar to departments of like character in other cities.

METHOD OF PROCEDURE.

Record maps are in sheet form and plotted on durable cloth-mounted paper 32 in. wide by 42 in. long, to a scale of 20 ft. to the inch. To facilitate the carrying on of the work in any part of this large borough, which has an area of over 77 sq. miles, a highway system of over 1200 miles and a sewer system of approximately 900 miles, without confusion and possible repetitions, the borough was divided into twenty sections, and in treatment each section is kept separate and distinct. The sections are again subdivided into smaller sections approximately the size of the record maps. By the use of tracing cloth templates, representing the shape and size of the record maps, but drawn to a scale adaptable to the city atlas (which in this borough is 100 ft. to the inch), a record map layout is determined for any section or any part of a section in which it is desired to carry on subsurface work. By the use of this method most satisfactory results have been obtained, as it has been possible to represent a section on a minimum number of sheets and avoid duplications, which entail much extra sheet work. (See illustration.) The area covered by each of such maps is not necessarily all which could be gotten upon the sheet, in fact, this is seldom the case; but the entire city was blocked off into areas approximating the standard size, but often somewhat smaller than the area of the sheet, care being taken to bring on each sheet the whole of any street intersection. (The greatest complication of structures is almost invariably found at street intersections.) In Philadelphia the record maps are plotted in sheet form, but individual streets and avenues are followed, making the duplication of street and avenue intersections necessary. The system adopted has greatly simplified the filing system, as records are filed by section and record map numbers, the record maps being numbered independently for each section; that is, if 150 record maps are required to cover a given section the record maps are numbered from 1 to 150.

Preliminary to preparing the record maps a detailed topographical survey is made over the area to be covered. This survey includes the location of the curb lines, building lines, car tracks, hydrants, telephone, trolley and electric light poles,



MAP OF PART OF A SECTION, SHOWING RECORD MAP LAYOUT

elevated columns, manhole covers, gas drips, and, in fact, any object on the surface of the streets that will in any way serve as a guide in determining the location of substructures. Upon completion of this survey the notes are plotted in the office, and part of the field or outside force is assigned to the work of surveying the manholes or junction boxes.

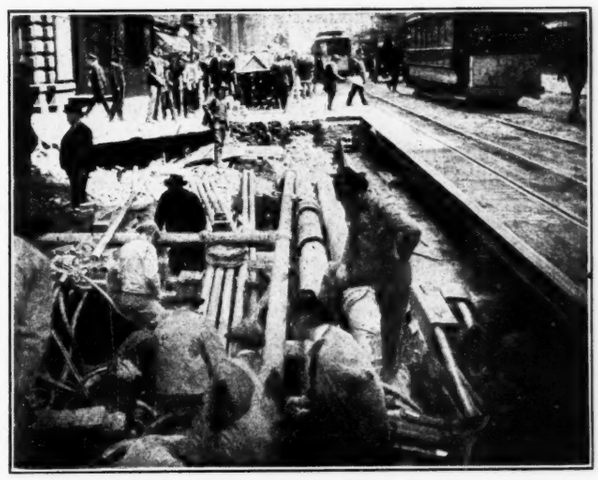
Prior to starting this subsurface work the engineer in charge of the division interviewed the heads of the various public service corporations, explaining the object and work of the division, and was uniformly successful in obtaining their co-operation, and they have responded promptly when requested to open manholes and junction boxes, by removing the heavy iron covers to facilitate the work of surveying the same. These surveys consist of taking full measurements to obtain the size, depth, number of conduits entering and leaving, and the location of the conduits with reference to the surface of the street and the nearest curb; also the location of any foreign pipe line passing through the boxes or manholes. After these surveys have been completed the information is plotted, and a representative is sent to the offices of the different public service corporations for all information obtainable relative to their conduit or pipe lines. Similar information is obtained relative to the location of the sewers, gas mains, water mains, etc. The measurement of the manholes is the most troublesome and time-consuming part of the work, from fifteen minutes to two hours being required to measure each one; but it is the most valuable, giving the exact locations of structures not otherwise obtainable.

One member of the force obtains each morning a list of street opening permits granted for that day and visits the openings within the district under investigation. It would undoubtedly be desirable to visit all the openings made in the borough, but as this frequently runs into the hundreds each day this would require a force out of all proportion to the number available for the work of the division. To partially offset this, however, it is proposed to require all corporations and others receiving permits for opening the streets and highways to deliver to the bureau, upon the completion of the work, a plan showing clearly and definitely the final location of the structure placed in said opening, with all dimensions given thereon, and also of any other structures encountered in making the excavation.

As far as possible the effort has been made to utilize all days when the weather conditions are good by having as large a force in the field as the funds available will permit; then during inclement weather the entire force is put on office work plotting and finishing maps.

In the past it was common practice, prior to the installation of substructures of any extent, to dig test pits to determine in a general way the route to be followed. This method always resulted in serious pavement mutilation, which in the future it is hoped to reduce to a minimum. But the test pits were necessary in the past and the division is ferreting out these old test pit records and through the co-operation of the Department of Water Supply, Gas & Electricity alone has copied over 3000 test pit records. Most of these pits were dug prior to the installation of the hydrants of the high pressure water system recently installed; and these, with test pit records from the other departments, have furnished many valuable data absolutely necessary in determining the location of substructures in the spaces intervening between manholes or junction boxes. In fact, not a stone is left unturned in the effort to obtain accurate information relative to substructures in the streets of the borough.

Upon accumulating such information the record maps are plotted and colored, black being used for the curb and building lines and trolley tracks, and distinctive colors for each line of conduits or pipes; water pipes being shown in blue, electric light and power conduits in red, gas pipes in green, telephone conduits in brown, etc. By using these distinctive colors the record maps are more easily read, and it is not a difficult matter to trace out a run of any particular pipe or



A GROUP OF SUBSTRUCTURES

conduit line. The maps are drawn very accurately to scale, so that all dimensions can be scaled from them. The location of each structure in a vertical plane is designated by the distance in feet and inches from its top surface to the surface of the roadway above. In most cases the dimensions also of the structure are given, thus indicating the depth of its under surface. The accompanying map, which shows a section of one of the standard sheets, gives an idea of the general appearance of the plotted data. The letter *c* following a dimension stands for the word "cover," and indicates the depth of the top surface of the structure below the street surface. Unfortunately, the colors cannot be reproduced here, but these tend to present much more clearly to the eye the relative location of the several structures.

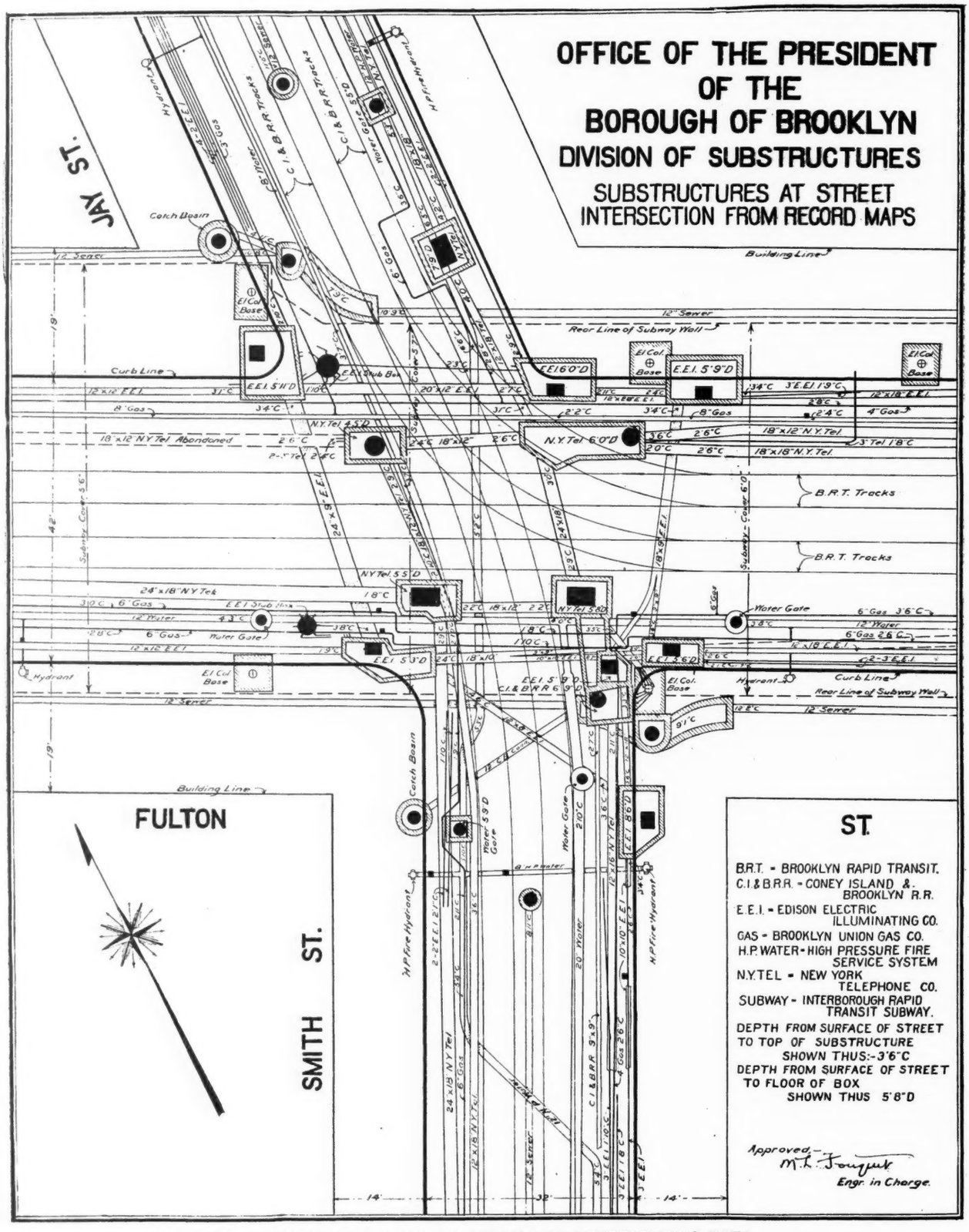
In case more detailed information is required than is shown on the record maps it is readily obtainable through a systematic filing system. All the work of preparing these record maps is carefully checked before they are finally colored. Of course no one of these record maps is ever actually finished, as it is necessary from time to time to make corrections to accord with the installation of new substructures and changes in present substructures, which are constantly taking place; but a scheme of recording these corrections is used so that there is little difficulty in keeping the record maps correct to date.

A great element of danger in the streets of New York is the explosions which occasionally occur in conduit manholes or junction boxes covering electric wires and cables, undoubtedly caused by an accumulation of gas being ignited by a spark from a short circuit or blowout. The employees of the division note in detail the condition of such manholes and boxes when they are being surveyed, especially as to the prevalence of gas and the presence in the manholes or in the walls of the same of gas, water and other pipes. In a number of cases gas pipes have been found running through manholes, and as these are, in the majority of cases, by no means tight at the joints, this may account for considerable of the gas which finds its way into the conduits. Information of such conditions is communicated to the corporations concerned as soon as it is obtained.

An idea of the amount of work required in making these surveys may be obtained from a statement of the work done during the year 1908. During this year 95,240 lin. ft. of curbs were located, 52,410 ft. of trolley tracks, and 85,700 ft. of building lines; also 318 hydrants, 174 catch basins, 1215 poles, etc., on sidewalks; 619 sewer manholes, 524 water supply gates and boxes, 10 fire department boxes, 385 boxes of wire conduits, together with a number of miscellaneous boxes, tubes, etc., including 181 gas drips; also 357 street openings and test-pits were visited and data obtained from them. During the year boxes, manholes, etc., were opened and measured, as described above, as follows: 1062 sewer manholes, 484 water-

supply boxes, 16 fire department boxes, 520 wire conduit boxes and 22 miscellaneous. The number of manholes, etc., opened and measured exceeded those located because of the fact that a considerable number of those located the year before had not been surveyed. Up to the present time about 80 miles of streets have been completed.

In making the locations and surveys several appliances especially adapted to this work have been developed or the use of standard ones found especially applicable. Among the latter is the optical square. This is used for turning right angle offsets from a transit line or from a curb in locating manhole heads, box covers and the like. In running the transit line there is so much interference with transit work by the traffic, both foot and wheel, that the line is chalked on the sidewalk between transit points and measurements taken from the chalk line to curb, building line, etc. Mr. Fouquet has de-


OFFICE OF THE PRESIDENT
OF THE
BOROUGH OF BROOKLYN
DIVISION OF SUBSTRUCTURES
SUBSTRUCTURES AT STREET
INTERSECTION FROM RECORD MAPS
JAY ST.
FULTON
ST.
SMITH ST.
B.R.T. - BROOKLYN RAPID TRANSIT.
C.I.&B.R.R. - CONEY ISLAND & BROOKLYN R.R.
E.E.I. - EDISON ELECTRIC ILLUMINATING CO.
GAS - BROOKLYN UNION GAS CO.
H.P. WATER - HIGH PRESSURE FIRE SERVICE SYSTEM
N.Y.TEL - NEW YORK TELEPHONE CO.
SUBWAY - INTERBOROUGH RAPID TRANSIT SUBWAY.
DEPTH FROM SURFACE OF STREET TO TOP OF SUBSTRUCTURE SHOWN THUS:- 3'6"C
DEPTH FROM SURFACE OF STREET TO FLOOR OF BOX SHOWN THUS 5'8"D
Approved,-
M. L. Fouquet
Engr. in Charge.

PART OF A RECORD MAP, SHOWING METHOD OF REPRESENTING DATA

signed for making offset measurements a steel tape, the especial features of which are that the graduations, which are similar to those on the ordinary ribbon tape, are placed to read from the opposite side, so that the reel may be held in the left hand and the tape, passing in front of the body, will then have the figures in reading position. For a handle on the reel a leather strap is provided on one side, so that the reel may be held much like a currycomb. When held in this position the notebook can be rested open on top of the reel and the measurements entered. It is the idea that the reel should always be held in the left hand, whether in use or not.

Another appliance is a 16-foot pole used for surveying sewer manholes. This pole is hinged at the middle so it can be folded to an eight-foot length, a piece of slotted steel on one half of the joint and a thumb nut on the other making it easy to fasten the two halves into a rigid 16-ft. rod. Graduations to tenths and the foot numbers are burnt into the rod, as the hard usage, including the wash of sewage, would remove painted figures and graduations in a short time. At the bottom of the rod are two pieces of iron, one six inches long in the line of the rod, the other 12 in. long at right angles to the rod. The latter is allowed to rest on the invert of any sewer which may be above the bottom of the manhole and the distance from the surface read on the rod; and the rod is then lifted until the iron projection is in contact with the top of the sewer and the depth of this also read. This gives the vertical diameter of the sewer. If the horizontal diameter is less than two feet it can be determined approximately by lowering the rod until the iron foot is at about the axis of the sewer and then revolving the rod until the foot comes in contact with the sides of the sewer. The 6-in. iron rod at the bottom of the main rod is to enable the depth of the manhole to be determined when there is a deposit in the bottom through which the iron foot might prevent the pushing of the rod proper.

The value of subsurface maps preliminary to the construction of public works of magnitude is well illustrated in the case of the construction of one of the most important substructures in New York, the rapid transit subway system. The engineers, in preparing the contract drawings and estimates for the construction of this vast system of tunnels, found it absolutely necessary to determine the subsurface conditions through the entire route, and, in fact, made subsurface maps a part of the contract drawings, giving the prospective contractor much valuable information as to the type and character of the substructure to be cared for during construction. This, without a doubt, resulted in a material saving in the cost of the work.

Another class of information of value to the city is the discovery of the existence of vaults and private tunnels. Several such have been found for which no legal authority has ever been granted, and the city is now able to collect fees for the use of several of whose existence it previously had no knowledge. In one instance there was a disposition on the part of the users of a large tunnel to combat the city's authority. This case is now in the hands of the corporation counsel, and will be fought in the courts.

The value of work of this character is now generally understood and the commendation of this division of the borough president's office by the commissioners of accounts in their recent investigation of the affairs of the borough evidenced that fact. The commissioners stated in part:

> The desirability of such a bureau of information, whether in the office of the Borough President or elsewhere, would appear to be unquestionable and the plan inaugurated in Brooklyn might well be followed elsewhere to advantage.

A similar department has recently been organized in the Borough of the Bronx. Prior to organizing, representatives from that borough were given every opportunity to study the Brooklyn system and have adopted it throughout. The Borough of Richmond also is about to start a subsurface department, and is profiting by the experience of the Brooklyn division.

LIFE OF WATER WORKS CONSTRUCTION

IN a paper on "Depreciation in Water Works Operation and Accounting," which has just been published in the Proceedings of the New England Water Works Association, Mr. Leonard Metcalf, incidental to a discussion of the principles of depreciation, has introduced a number of data and opinions concerning the life of the various structures going to make up the ordinary water works plant. In a table he gives the maximum and minimum limits of the possible life of these several structures as follows:

Water-works structures.	General limits of useful life. Years.
Reservoirs	50-100
Steel standpipes	25-40
Masonry buildings	30-50
Wooden buildings	20-40
Filter plants, permanent construction	25-50
Pumping machinery, high duty in large units	30-50
Ordinary pumping machinery	20-30
Steam engines	15-25
Boilers	12-20
Electric generators and motors	20-30
Masonry conduits	50-100
Cast-iron pipe, large diameter:	
In non-tuberculating waters	60-100
In tuberculating waters	50-75
Cast-iron pipe, small diameter	30-50
Steel pipe	25-40
Wood stave pipe	20-30
Wrought-iron service pipes	15-30
Hydrants	35-50
Valves	40-50
Meters	15-25

Considering the plant as a whole he states: "The average length of life of water works plants depends upon many factors. Broadly speaking, from 40 to 60 years probably represents the usual range of life of the structures, except in the case of very rapidly growing towns or cities.

"The Wisconsin Public Service Commission, in a recent opinion upon the value of the Fond du Lac, Wis., water works, gives the average life of the different water works plants examined by it to date as 65¼ years.

"The U. S. Commerce and Labor Bureau, in its special report upon statistics of cities having a population of over 30,000, in which was included some valuable water works statistics, assumes a fifty-year period of life."

The Knoxville Water Company in a period of seventeen years showed an annual average rate of depreciation, exclusive of proper allowance for repairs and renewals, of 2.12 per cent.

Owing to the variation in the amount of gross income in water works, as compared with their cost or value, the depreciation thereon expressed in percentage of the gross income is correspondingly variable. Broadly speaking, however, it may be said that the depreciation is likely to amount to 10 per cent, more or less, of the gross annual income of the works. This is roughly calculated on the basis of a depreciation of one per cent per annum and a gross annual income of 10 per cent of the value of the plant. (One per cent annually contributed to a sinking fund would produce 100 per cent in 41 years, with interest at 4 per cent, or 47 years with interest at 3 per cent.)

In discussing the paper Mr. T. H. MacKenzie called attention to the effect which the nature of the plant would have upon the average life of the same. For instance, in a considerable part of New England the plants are gravity plants, and the reservoir would cost fully 40 per cent as much as the entire plant. The water is impounded by earthen dams, and if these are originally so located as to impound sufficient water no extensions of them are required, and they will remain for a century or possibly several centuries fully as effective as when first constructed. Mr. Metcalf replied that, while this was true in many cases, there would be others in which the functional depreciation—that is, the failure of the reservoir to continue to render adequate service, because of incapacity—may become a very important factor.

Concerning this matter of estimated life of structures Mr. Emil Kuichling stated: "Most of our data are of compara-

tively ancient origin and not based upon apparatus and materials used at the present time. On searching the literature of the subject it will be found that many of the figures are based on mere opinions, expressed many years ago before some commission or tribunal, and have been carried along by a variety of authors without any alterations founded on later experiences." It was considered by several of the speakers as fortunate that a committee of that association was endeavoring to collect accurate data on just this point.

As more or less intimately connected with this matter of depreciation of water works structures is that of depreciation in plants used by the department. In reference to this Mr. Metcalf referred to the allowances made by MacArthur Brothers Company for depreciation upon their plant used in the construction of the Cross River Dam for the Aqueduct Commission of New York City, the stated depreciations being monthly allowances. These allowances were as follows:

Plant items.	Monthly Depreciation. Rate allowed by Contractors.
Locomotives, cars, tracks, excavators, machinery, etc....	1.1 %
Scrapers, wagons, etc.; horses, mules, etc.....	2 %
Camp equipment.....	2 %
Small tools.....	5 %
Boats, scows, etc.....	4 %
Office furniture.....	1.1 %
Real estate.....	½%

OVERCROWDING STREET CARS

A recent issue of the U. S. Consular and Trade Reports contains brief statements concerning the prevention of overcrowding street cars in nine European cities from which we abstract the following information: In Liverpool the regulation street car carries passengers on the upper deck, the lower deck seating 22 people and the upper deck 38. No passengers are allowed to stand on the upper deck, and there is an almost entire absence of crowding on the lower. During rush hours the number of cars is increased by 68 per cent. Passengers board the cars at the rear, the doors being wide enough to admit only one person at a time. When the car has been filled an iron gate is closed. The only statement of the number of passengers carried is that of the elevated railroad running the entire length of the city, 6½ miles, which carries an average of 24,000 passengers a day. Several New York lines carry ten times this number.

In Birmingham standing in the cars is prohibited by law, and the police have the authority to regulate the loading and unloading of passengers. This is systematized, the passengers being required to form on the street in two lines, one line for the lower and the other for the upper deck. The forming of these two lines is called the "queue," and is found in most cities in Great Britain. It is stated that the people take naturally to this through the habit of forming similar lines at the entrance to theaters. When all the seats are occupied the motorman draws a chain across the entrance, which is invariably at the front of the car, and the conductor across the exit at the rear. The consul making this report naively remarks that no inconvenience is caused by the enforcement of the law against crowding except to those at the rear of the queue. The quota of 76 cars running at five in the morning is increased to 273 at 7:30, after which the number fluctuates, being 226 from 6 to 8 p. m.

In Manchester four persons are allowed to stand inside a small car and six persons inside a large car. Here also the queue system is employed in the business centers or whenever there is a rush of passengers. The small cars carry 52 persons seated and the large cars 74 persons.

In Leeds the cars have a seating capacity of 58, and eight persons are allowed to stand. During the three rush hour periods the number of cars is increased about 30 per cent. It is estimated that two-thirds of those who use the cars live within two miles of the center of the city.

In Belfast overcrowding is prevented by the conductor closing the gate of the platform as soon as the car is full. Under certain circumstances eight persons are allowed to stand on the lower deck and the same number on the upper deck.

In Marseilles most of the cars accommodate 21 persons inside and 28 standing on a large platform. There are no double-deck cars. During rush hours the service is doubled and tripled on certain lines by means of trailers 25 ft. long.

In Brussels the majority of the workmen walk to their work and there is no trouble from overcrowding. The number of passengers which can ride upon the street cars is strictly limited and overcrowding is prevented by the conductors and the police. This regulation is said to delay passengers in getting about the city to a certain extent, although additional cars are added during the rush hours.

In Berlin police regulations provide that no more than seven shall stand in a car, and the number which may be carried is posted in a conspicuous place in each car. There are exceptional occasions, however, when a greater number may be carried, these being after 11 p. m. on week days, during sudden showers or snow storms, when traffic is interrupted, on occasions of parades, large funerals or public festivities and on Sundays and holidays after 3 p. m.

In Moscow, Russia, the cars seat 26 persons, and eight are allowed to stand on the rear platform of the trailer, but no one is permitted to stand inside the car nor on the front platform. Cars are compelled to stop on the near side of each street crossing, whether any one desires to enter or leave or not. There are several peculiarities in the cars themselves, one being that no open cars are used in summer and that in all cars the windows on one side are fixed, while those on the other can be opened in warm weather; the object being to avoid cross drafts of air. Instead of bearing the name of the street or district to which it is going, each car bears a large number which indicates its route, small vest pocket books, sold at five cents each, giving a list of all the routes and their numbers.

GOOD ROADS TRAIN IN PENNSYLVANIA

A good roads train is to visit the cities and towns of the State of Pennsylvania, along the line of the Pennsylvania railroad, being operated by that road. The tour of education began Jan. 25, at Harrisburg.

This train will be in charge of the Pennsylvania State College, co-operating with the Roads Department of the National Government and the State Highway Department of Pennsylvania. The train, consisting of four cars, will be used for lecture purposes in villages and small towns along the lines of the Pennsylvania Railroad. One car will be fitted up with a lantern for the illustration of the lectures. Another car will be used for exhibits, showing models of several types of roads, such as earth, sand-clay, gravel, macadam, and telford. This car will also contain a series of photographs and drawings for illustrating the different methods of drainage and kinds of construction required for special conditions. Two flat cars will contain samples of the most important machinery required for service in road building, also a home made roller, drag, and sprinkling wagon. The exact cost and methods of construction of the roller and drag will be shown in detail.

The train will stop in each township along the railroad, where good roads meetings will have been previously advertised. Evening meetings will be held in theaters or court houses of the larger cities, while the exhibits will be open day and evening, with experts in attendance to give explanations and answer questions.

The Pennsylvania State College will have two experts on the train during the entire trip; the United States Government will send at least one of its best trained men, and the State Department of Highways of Pennsylvania will also be represented. Representing the Pennsylvania Railroad Company will be officers of the divisions over which the train will pass.

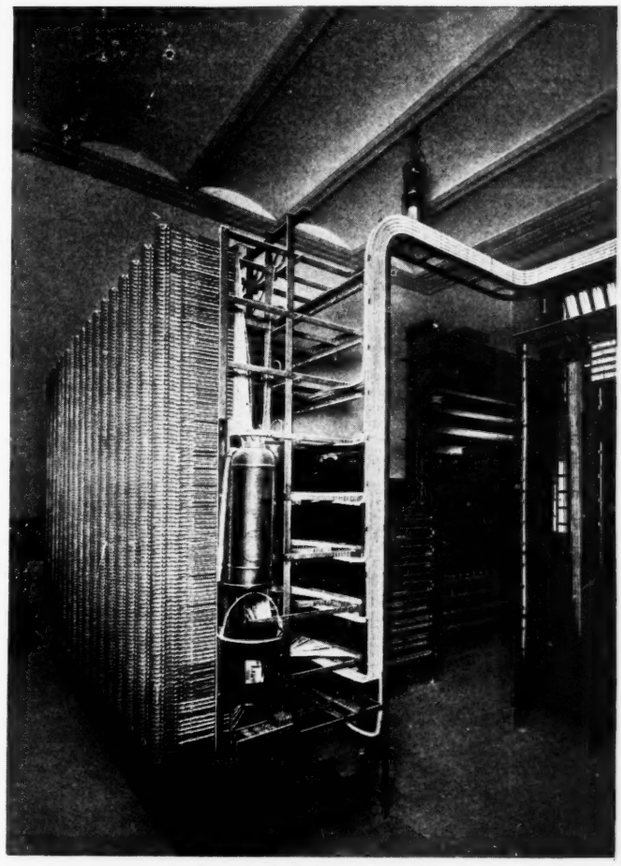
PHILADELPHIA MUNICIPAL TELEPHONES

Operates Six Hundred Local Stations—Special Service for Police Department—All Police Messages Recorded—Patrol Boxes

The city of Philadelphia has had in service since July, 1908, a telephone system owned and operated by the city for the use of its several departments. This system is used for all telephone service in connection with hospitals, fire department stations, police stations and the several offices of the departments and bureaus throughout the city. The exchange for this municipal system is located in the city building, and is a thoroughly equipped central exchange, consisting of two four-position standard switchboard sections, accommodating seven regular operators and one testing operator. There is a capacity of 700 local lines and 200 trunk lines, although only about 600 local stations and about 100 trunk lines have yet been connected with the switchboard. All of the trunk lines are equipped with the visual "busy" signal; that is, there is connected with each multiple jack of the trunk line, in front of the operators, a green light which remains lighted while its respective trunk line is in use.

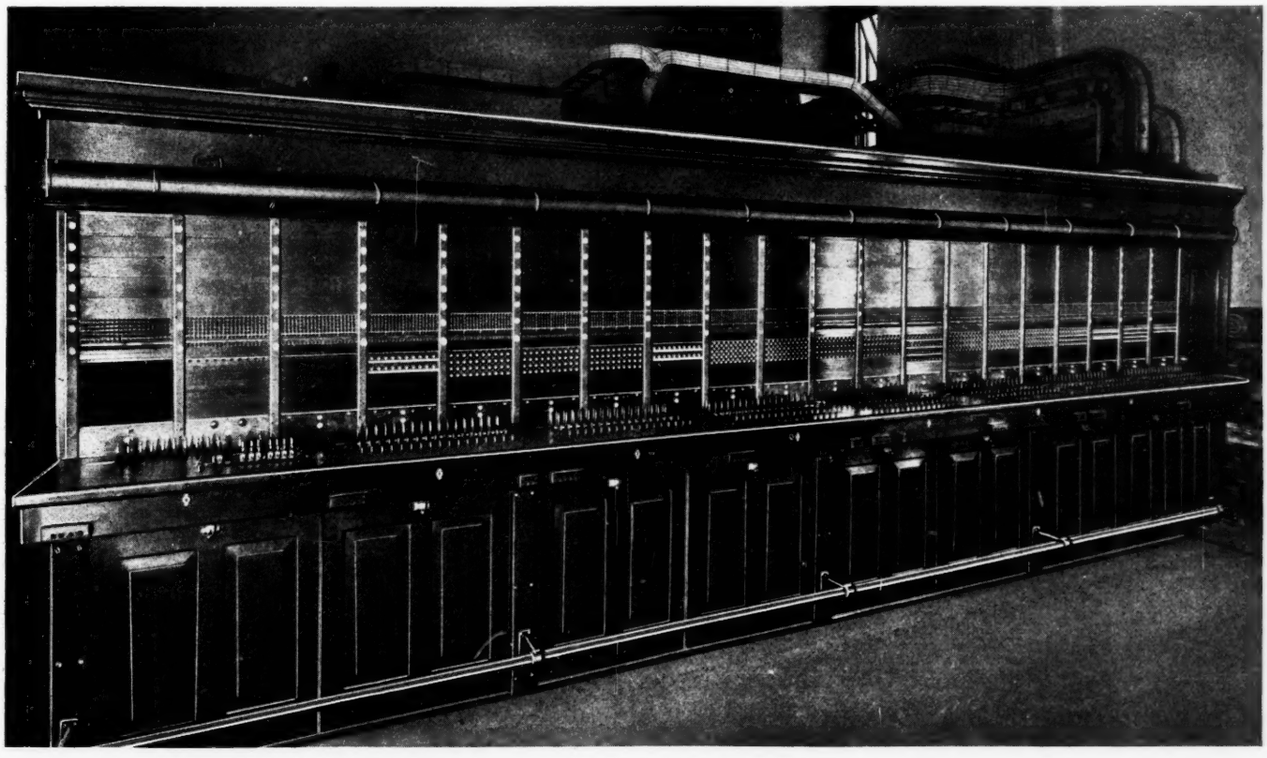
The police department is served by what may be termed a private police telephone system, which has an exchange switchboard located at police headquarters. At present there are something less than 100 local stations connected to this switchboard and 20 trunk lines, 10 of the latter being connected to the main municipal exchange switchboard. All of the police stations throughout the city are connected with this police exchange.

The wires and cables of this system are carried in underground conduits, of which the city owns an extensive system outright, and it also reserves the privilege of using one duct in every street conduit constructed or owned by private corporations. The smallest conductor used is number 18 B and S. The longest continuous connection is from the Holmesburg police station to the Chestnut Hill police station, through the city building, this requiring approximately 40 miles of underground cable.



MAIN DISTRIBUTING FRAME

The cables enter the city building through manholes or vaults and are there spliced, without fuses or other protective devices, to cables which hang in a vertical shaft. At the upper end these cables are connected to a distributing frame similar to the standard equipment found in large commercial telephone exchanges. This frame contains more than 100,000 soldered



SWITCHBOARD IN CITY HALL EXCHANGE

connections. The switchboard and general central office equipment were furnished by the Western Electric Company, and are similar to the type used by them for operating telephone companies generally.

At each of the police stations the terminal equipment consists of a standard telephone set equipped with a chest type transmitter and double-head receiver. The house sergeant is in charge of this and receives and sends all telephone messages. This set is attached to a standard typewriter desk in such a way that the sergeant can operate the typewriter while receiving and transmitting messages. An arrangement of jack, cord and plug is used, similar to that used at small switchboards.

The house sergeant receives all messages, both routine and special, and takes them down at once upon the typewriter, making three copies, one of which is for the lieutenant, captain or officer in charge of the station house; the second copies are turned in at stated intervals to the City Hall for filing, and the third copies are filed at the station house where received.

Patrol boxes are located in all precincts or districts, and each patrolman is required to communicate with his house sergeant at least once each hour, thus making it impossible for any of them to be off the beat for any length of time without detection. Chief J. T. McLaughlin designed a patrol box by which, should the calling patrolman desire, he may connect himself with the main police board at the city hall, "cutting past" the house sergeant. This is especially desirable when a patrolman wishes to give an alarm of fire, as all fire alarms are turned into the city hall before any of the signals in the fire house are struck. This box would also permit an inspector or detective to communicate with headquarters without the knowledge of the officer in a local station. Another feature of this box is that the patrolmen must pull the box, thus indicating its number, before he can telephone, and therefore cannot deceive headquarters as to the point from which he is telephoning.

A RUSSIAN TRICKLING FILTER PLANT

The city of Kharkov, of 250,000 population, has no public sewers, and the various hospitals and public and private institutions have individual purification plants. One of the largest of these is that of the municipal hospital, which takes care of the waste of 3,000 persons. In constructing this plant the amount of sewage was estimated at 10,500 cubic feet of water, or a daily capacity of 26 gallons per capita. At present the sewage varies between 3,900 and 4,025 cubic feet, or an actual amount of water used in the institution of from 13 to 14 gallons per capita.

The plant consists of a septic tank and three filter beds, one primary and two secondary. The primary bed has a filtering surface of 3,000 square feet, composed of several layers of coke; the bottom coke layer consists of pieces from 3 to 8 inches in diameter, the upper layers being each 4 inches deep and consisting of pieces varying from 2.4 inches to 0.3 inch in diameter. As originally designed, two additional layers of very fine sand were provided for, but this idea has been abandoned, as larger sized coke was found to give better aeration. The primary filter is divided by partitions into four beds, to each of which the sewage is discharged by siphon tanks. Each of these tanks holds 200 gallons, fills in 10 or 15 minutes and empties through the siphon in about three-fourths of a minute. The sewage is distributed onto the filter beds by seven iron channels placed 20 inches apart and equipped with 0.3-inch openings spaced 8 inches apart along each side. This primary bed, when filling at the rate of 1.8 cubic feet of sewage for each square foot of area, did not at first give very good results. The effluents showed an efficiency of only 40 to 50 per cent by the oxygen test, whereas it was considered that 60 per cent should be secured. This low efficiency was attributed to lack of uniformity in distributing the sewage on the beds and improper grading of the coke particles. After the bed had been covered with a layer of fine coke of 0.4 to 0.12 inch diameter, the filters gave satisfactory results.

The effluent from the primary bed passes to a septic tank, to pass through which requires from two to three hours, and then to the two secondary filters. These filters are built as percolators, each containing 400 square feet and being 3.3 feet deep. The top layer is of very fine coke 4 inches thick. The bottom layer is of coke in one filter and of slag in the other. To secure the maximum aeration the bottoms of the filters are covered with semi-circular pipes of 16-inch diameter. After two and one-half months operation these secondary beds were giving good results and producing a non-putrescible effluent, the efficiency by oxygen test being from 60 to 70 per cent. These filters were operated at the rate of 10 to 12.5 cubic feet per square foot of area (3,250,000 to 4,000,000 gallons per acre) per 24 hours. At times the water stood two feet above the top of the filter, when the surface became clogged. The surfaces of beds were cleaned once a month.

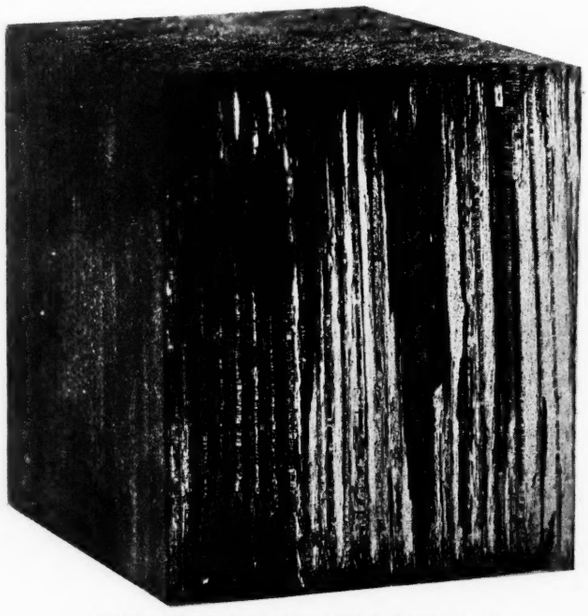
Experiments with this plant appeared to show that the two sets of filters gave better results than could be obtained with one set of filters only. In this particular case the use of three of the four primary filter beds gave as good results as when all four were in use, apparently showing that the capacity of this filter has not been reached. For this information we are indebted to an article in the *Gesundheits Ingenieur* by Mr. N. C. Malischewsky.

WOOD PRESERVING WITH ASPHALT OILS

A paper was presented before the Wood Preservers' Association at its meeting on January 19 of this year by Mr. Frank W. Cherrington, of the Indian Refining Company, in which he described experiments made and results obtained in the treatment of wood with asphaltic oils for the purpose of preserving it. No claim appears to have been made of any antiseptic quality in the asphalt or the oils accompanying the same, but the benefit claimed appeared to be entirely that of exclusion of moisture.

He stated that in 1885 a committee on wood preserving of the American Railway Engineering and Maintenance of Way Association reported that crude petroleum would prove a preservative so long as it continued to saturate the wood by exclusion of water, but that the evaporation of the volatile oils rendered it useless for this purpose. Concerning this, Mr. Cherrington stated that this was based upon experiments with eastern paraffine oils, which are not stable in their composition.

About 1901 the Santa Fe Railroad injected California asphaltic crude oil into pine ties and "laid them in a section of track in Southern Texas, where the climatic condition is one of the most



WOOD BLOCK IMPREGNATED WITH ASPHALT OIL

severe for ties to be found in North America. A maximum quantity of oil was forced into these pine ties, the absorption per tie being, of course, dependent upon the amount of heart and sap wood in each tie." Oils from other sections of the country than California or Mexico were reported by the author to be too volatile and highly inflammable for this purpose in their natural state, but they can be refined to a desirable consistency.

Other experiments made on cross-ties were described. It was concluded from these that fairly good penetration could be secured in the various oaks, beech, gum, etc., when injecting all the preservative that the ties would absorb, this maximum amount being found to be about seven pounds per cubic foot. Short leaf pine ties were found to readily absorb straight asphaltic oil in larger quantities and with thorough penetration.

One test was made at Columbus, in which a paving block of standard size was treated with residual asphaltic oil to the amount of 16 pounds per cubic foot. It was then dried in an oven of a temperature of 120 degrees F. for a period of 24 hours, weighed and then immersed in clear water for a period of 24 hours. The gain in weight was found to be 0.02 of one per cent. "The same block, if treated with 20 pounds per cubic foot of creosote, would have been allowed to have absorbed as high as three or four per cent of water, by weight."

Other experiments were made with mixtures of 25 per cent of creosote and 75 per cent of asphaltic oil, and these appeared to demonstrate that the two substances remained mixed while penetrating the wood, and that a very satisfactory penetration was secured by the mixture.

"It is readily admitted that the only value of asphaltic oil obtained from the central United States as a wood preservative would be by the injection of a maximum quantity of oil into the wood." It is stated that in the test of ties so treated by the Santa Fe Railroad, nine years' test has indicated that where maximum saturation had been obtained the ties had been well preserved during this time. Nothing is stated by the author to indicate that any actual test has ever been made of the use of this material as a preservative for wood paving blocks, but we believe it is the intention of the asphalt companies to demonstrate its value for this purpose.

CONCRETE WATER TOWER IN HOLLAND

A reinforced concrete water tower has been built in Leyden, Holland, which is described by the *Journal fur Gasbeleuchtung*, from which we abstract the following:

In designing a water tank of about 300,000 gallons capacity, elevated on a tower about 65 feet high, it was first intended to make the tower of brick and the tank of iron. On receiving bids on this design and one for reinforced concrete, however, the latter was found to be much cheaper, the bid being $22,500 against $28,000 for the brick and iron construction. The reinforced concrete construction was therefore adopted.

The tower consists of 12 reinforced concrete pillars connected by two sets of horizontal braces. The spaces between the columns and the horizontal braces are filled with a brick wall, one brick thick, covered on the inside with a plaster coat. The twelve columns stand on a twelve-sided foundation formed as a complete duodecagon, having a cross-section similar to an inverted T. This foundation is supported by 240 piles 39 feet in length. It is 8¼ feet wide and 6 feet high, and was constructed of great strength in order to distribute uniformly among the piles the load contributed by the twelve columns. The columns are 4.95 by 1.98 feet at the bottom, reduced to 2.31 by 1.98 at an elevation of 23 ft., above which they continue with this size to the top.

At the height of about 50 ft. a series of concrete semicircular arches are sprung from each column to its diametrically opposite one. These are in reality not complete arches, but are rather girders with an arched under surface which do not meet in the center but abut against a ring of concrete under the center of the tank. On the outer side of each column is constructed a bracket 1.3 ft. thick, and these brackets and the arched girders before mentioned serve to support the tank. The tank is cylindrical, 46 ft. in diameter and 26 ft. high. The bottom of the tank has a thickness of 0.95 ft., and the walls are 0.99 ft. thick near the bottom and 0.33 ft. at the top. Both sides and bottom are reinforced. In order to protect the tank from temperature contraction and expansion it is inclosed by an outer wall or tank which is constructed of 12 reinforced concrete columns, each standing on the outer end of one of the brackets, which columns are connected at top and bottom by concrete beams, the rest of the space between being filled with brick work. The top is covered with a flat roof, in which is placed wire glass which serves to admit light into the tank. The balance of the roof is covered with a waterproof mastic and gravel and a low wall is carried entirely around the outer edge. Three lightning rods are provided on the roof.

A vertical concrete box is carried up in the center of the tower from the ground to the under side of the tank, which contains and protects the supply, drain and overflow pipes. This is rectangular in form and rests on 21 piles. Just outside of this are four columns extending from the ground to the under side of the tank, which serve as supports for a reinforced concrete stairway. These posts are connected at various heights by strong tie-beams. Near the top the stairway ends in a platform and is continued by supplementary stairs leading to the space between the shells of the tank and the enclosing structure. From this point access is had to the top of the tank by means of an iron ladder, which is suspended in this annular space from an iron rail carried around the top of the inner tank, which rail also carries a ladder inside of the tank. These ladders travel on this rail and can be pushed entirely around the tank, thus giving access to any portion of the inner or outer surface. A float with connection from the same to a valve at the top of the inlet pipe automatically shuts off the water when the tank has been filled to the desired level.

The concrete foundation ring is strongly reinforced, both longitudinally and in cross-section. The main columns have vertical reinforcements which are tied together with round iron hoops.

An effort was made to give a pleasing appearance to the tower. The concrete surfaces are finished with a coat imitating sandstone, and the brick work, while flat, is varied in coloring, the bottom being dark, the panels at mid-height being red, and the top brown.

COMMISSION GOVERNMENT IN NEW JERSEY

THE commission government idea has reached New Jersey, and a number of the cities of the State, including Trenton, the capital, are working for the passage of a bill by the present Legislature providing for the adoption of the commission form of government by any cities of the State which may so desire. On January 24 there was a State convention addressed by Mr. John MacVicar, of Des Moines, at which about 20 cities were represented, six of them by their mayors in person, and a State committee, composed of one representative from each city in the State which is interested in the problem, will meet shortly and prepare a draft of a bill which the Legislature will be asked to pass. As Governor Wilson is president of the Short Ballot Association, and the short ballot idea and the commission government idea have many features in common, it is believed that the movement will receive the support of the Governor. The movement, so far as Trenton is concerned at least, is being actively supported by the Chamber of Commerce of that city and the Trenton *Evening Times*.

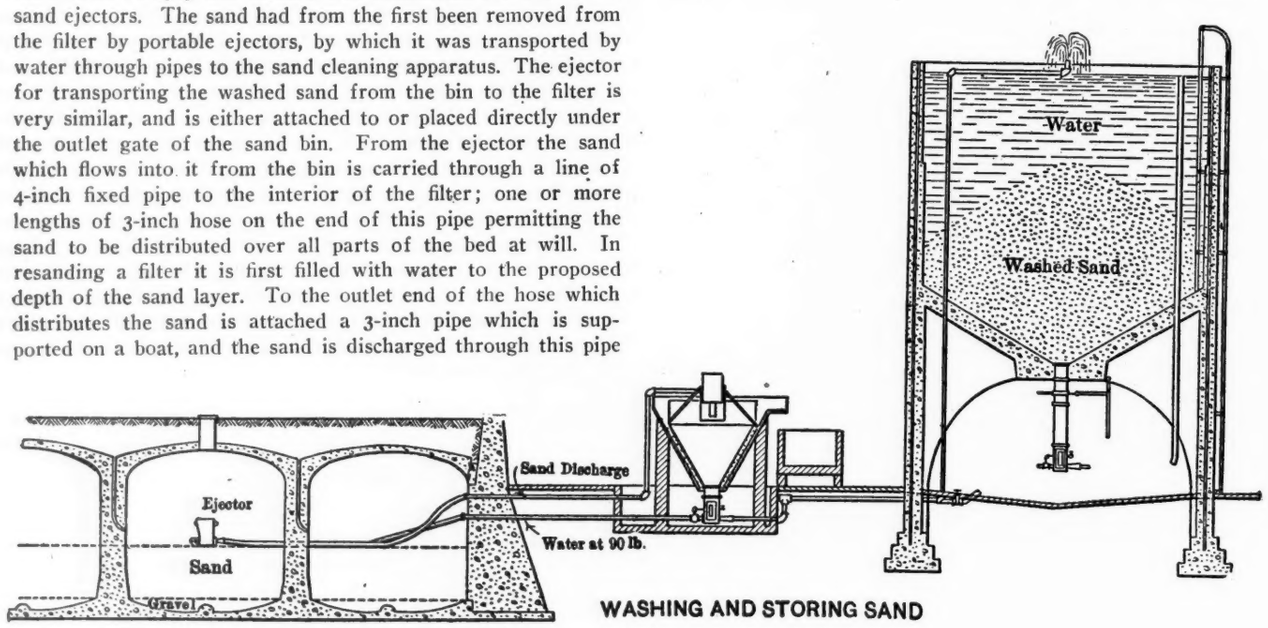
As was shown by the list of cities which had adopted commission government, which was presented in these columns a short time ago, most of the cities which have adopted it are in the Mississippi Valley, Texas and Oklahoma; but present indications are that the movement will spread more or less rapidly and generally into the other sections of the country.

OPERATION OF WASHINGTON FILTRATION PLANT

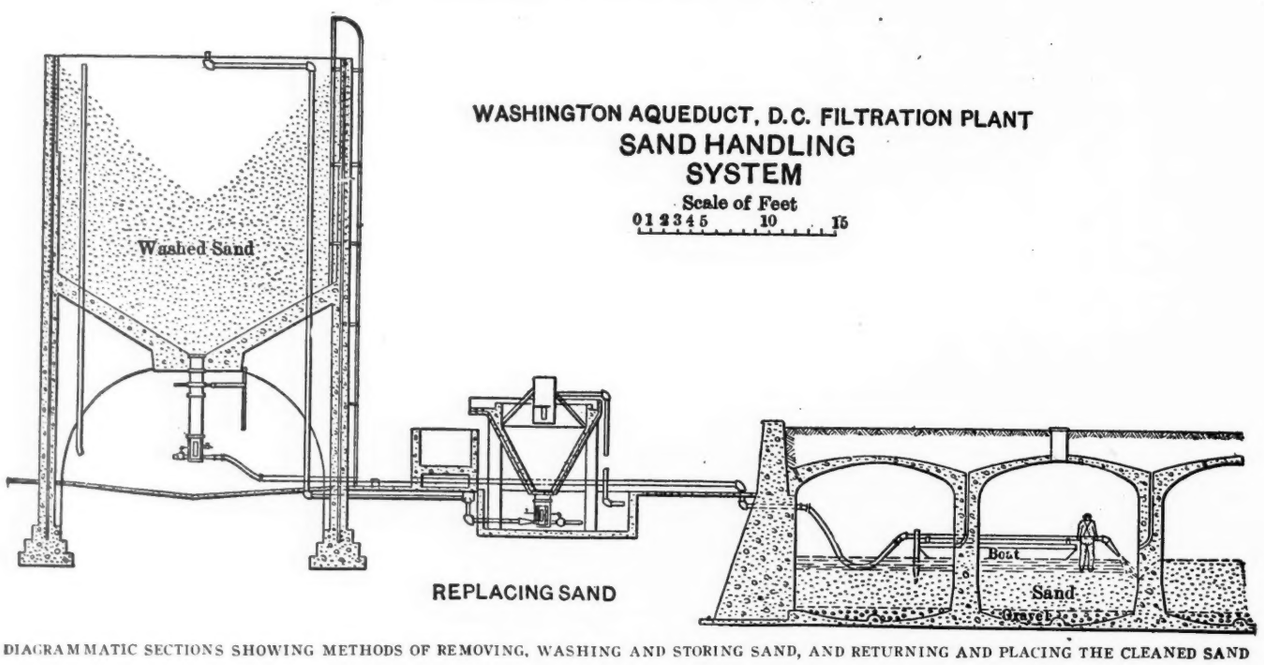
Replacing Washed Sand by Ejectors—Amount of Sand Removed by Scraping—Cost of All Items of Maintenance—Experiments in Preliminary Filtration, Sedimentation and Rapid Filtration

In a paper before the American Society of Civil Engineers, to be presented on February 15, and published in the Proceedings of that Society for December, 1910, Mr. E. D. Hardy, superintendent of the Washington, D. C., water purification plant, gives a description of some of the methods employed and results obtained during five years' operation of the plant. One of the most interesting of these is the manner of handling and washing the sand. His description of this we abstract as follows:

For the first three years of operation the sand was carried from the sand bins in carts and dumped through the numerous manholes of the filters into chutes, the lower ends of which could be pointed in any direction so as to facilitate the spreading of the sand evenly over the surface of the filter. About the middle of 1909 this method was abandoned for the use of sand ejectors. The sand had from the first been removed from the filter by portable ejectors, by which it was transported by water through pipes to the sand cleaning apparatus. The ejector for transporting the washed sand from the bin to the filter is very similar, and is either attached to or placed directly under the outlet gate of the sand bin. From the ejector the sand which flows into it from the bin is carried through a line of 4-inch fixed pipe to the interior of the filter; one or more lengths of 3-inch hose on the end of this pipe permitting the sand to be distributed over all parts of the bed at will. In resanding a filter it is first filled with water to the proposed depth of the sand layer. To the outlet end of the hose which distributes the sand is attached a 3-inch pipe which is supported on a boat, and the sand is discharged through this pipe to the point required. Work is first begun at the far end of the filter, and the boat is gradually swung from side to side of the filter and at the same time backed toward the front end. At first it was feared that during the filling a small quantity of mud would be deposited on the surface of the old sand, and covered by the new layer, and that this mud would ultimately cause subsurface clogging. For this reason, when the process was first adopted, the sand was raked thoroughly just ahead of the discharge of the fresh sand. Later, however, it was found that by giving the end of the discharge pipe a slope of about 45 degrees from the horizontal the force of the current of sand and water would itself stir up the old sand sufficiently to prevent such a deposit forming. This latter method had been used almost exclusively for fifteen months

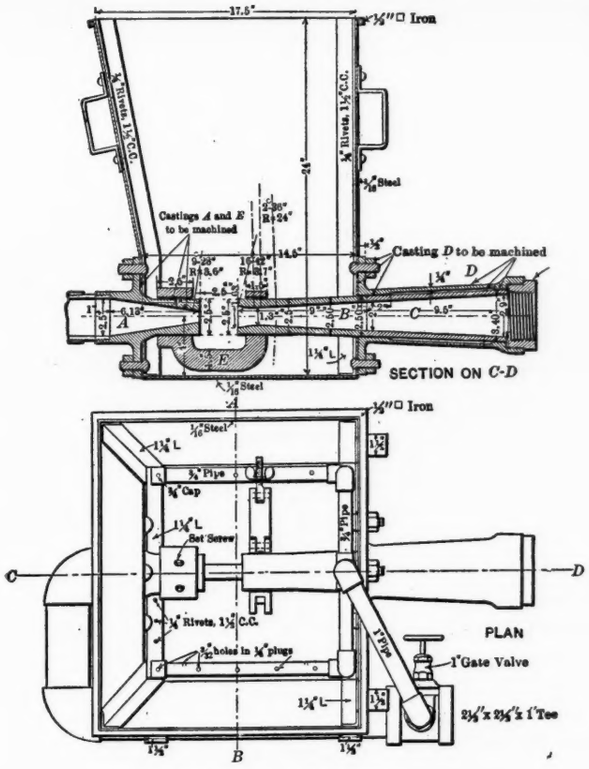


WASHING AND STORING SAND



REPLACING SAND

DIAGRAMMATIC SECTIONS SHOWING METHODS OF REMOVING, WASHING AND STORING SAND, AND RETURNING AND PLACING THE CLEANED SAND



DETAILS OF SAND EJECTOR

prior to the writing of the paper, during which time eleven filters had been resanded and 24,531 cubic yards of sand replaced without any indication having been observed of a loss of head due to subsurface clogging. The filters resanded in this way have been considered more efficient than those in which sand was replaced with carts.

During the year 1909-'10 the average depth of sand removed per month by scraping was 1.314 inches, there having been three months in which no sand was removed and one month (March, following a month when there had been no scraping) in which 3.64 inches were removed. In removing the sand from the filter the average monthly rates in cubic yards per hour during 1909-'10 varied from 6.2 to 11.8, the mean of the monthly rates being 9.2. In replacing the sand by ejector the average rate per cubic yard per hour varied from 7 to 17.7, the mean being 10.0. The cost of handling the sand, not including any charge for the quantity of water used, during the fiscal year 1909-'10 was as follows, the items being per million gallons pumped to the filter: Scraping averaged 5 cts., ranging from 2 cts. to 10 cts. Ejecting averaged 10 cts., ranging from 3 cts. to 21 cts. Washing averaged 1 ct., ranging from 0 to 4 cts. Smoothing averaged 1 ct., ranging from 0 to 2 cts. Raking averaged 1 ct., ranging from 0 to 2 cts. Resanding averaged 8 cts., ranging from 1 ct. to 27 cts. The total cost averaged 26 cts., ranging from 9 cts. to 57 cts. Stated in cost per cubic yard of sand handled, the monthly averages were as follows: Scraping, average 7 cts., ranging from 6 cts. to 12 cts. Ejecting, 14 cts., ranging from 9 cts. to 25 cts. Washing, average 2 cts., ranging from 0 to 4 cts. Smoothing, 1 ct., ranging from 1 to 2 cts. Resanding, 10 cts., ranging from 5 cts. to 17 cts. Total cost per cubic yard of sand, general average 34 cts., the monthly averages ranging from 25 cts. to 51 cts.

The cost of pumping water for removing and washing sand, including all labor, materials and repairs, was 6 cts. per cubic yard of sand ejected and washed; and 3 cts. per cubic yard was the cost of water for replacing the sand. The latter should be increased by one or two cents on account of the fact that while sand is being replaced a slight upward flow is maintained through the filter. This upward flow is not believed to be absolutely necessary but is always used as an additional safeguard against the formation of a layer of mud on the old sand.

The cost of operating the plant is given by Mr. Hardy in considerable detail, to permit the superintendents in other cities to compare it with figures for their own plants. The statement of expenses accounts for the entire appropriation for the care and maintenance of the filtration plant, including pumping water to the filters, parking and caring for the grounds, buildings, roads, sidewalks, etc. All of this is shown in two tables, one giving the itemized salaries and wages of employees, the other the cost per million gallons filtered for the several subdivisions of the expense account.

List of Employees, Rates of Pay, and Approximate Cost for Supplies

1	Superintendent	$3,000.00
1	Chief Chemist and Assistant Superintendent	2,100.00
1	First Assistant Chemist	1,500.00
1	Second Assistant Chemist	1,000.00
1	Stenographer and Clerk	1,200.00
1	Surveyor	1,200.00
1	Laboratory Helper	720.00
1	Janitor	600.00
1	Chief Steam Engineer	1,800.00
1	First Assistant Steam Engineer	1,440.00
1	Second Assistant Steam Engineer	1,080.00
3	Oilers, at $900 each	2,700.00
3	Firemen, at $900 each	2,700.00
3	Laborers, at $540 each	1,620.00
1	Filter Foreman	1,200.00
2	Foremen, at $900 each	1,800.00
1	Timekeeper	900.00
3	Watchmen and Gauge Tenders, at $900 each	2,700.00
1	Machinist	1,140.00
1	Blacksmith	900.00
1	Storekeeper	900.00
1	Painter	900 00
1	Mechanic	900.00
1	Electrician	900.00
4	Skilled Laborers, at $600 each	2,400.00
1	Watchman and Special Officer	900.00
1	Recorder	720.00
27	Laborers at $1.50 per day, for 300 days	12,150.00
3	Teams at $2.00 per day, for 200 days	1,200.00
	Laboratory and office supplies	2,700.00
	Filter supplies, tools, hose, repair of roads, parks, shrubs, etc	8,820.00
	Pumping station supplies, oil, waste packing, repairs, etc	3,570.00
	3,600 tons of coal, at $3.15 per ton	11,340.00
	Charges in U. S. Engineer Office, labor	2,900.00
	Charges in U. S. Engineer Office, materials	400.00
	Total	$82,000.00

COST PER MILLION GALLONS FILTERED

(A) LABOR.

Month.	Office and laboratory.	Pumping station.	Filter Operations: Sand handling.	Filter Operations: Repairs, etc.	Parking (care of grounds), etc.	Main office.	Total.
1909.							
July	$0.73	$0.57	$0.86	.....	$0.31	$0.15	$2.62
August	0.75	0.64	0.59	.....	0.71	0.14	2.83
September	0.83	0.67	0.80	.....	0.51	0.17	2.98
October	0.72	0.66	0.73	.....	0.34	0.08	2.53
November	0.87	0.76	0.42	.....	0.38	0.18	2.61
December	0.90	0.69	0.27	.....	0.40	0.12	2.38
1910							
January	0.81	0.63	0.33	.....	0.14	0.10	2.01
February	0.94	0.74	0.35	$0.07	0.11	0.16	2.37
March	0.92	0.81	0.30	0.07	0.18	0.13	2.41
April	0.93	0.83	0.49	0.03	0.36	0.13	2.77
May	0.86	0.72	0.36	0.03	0.55	0.18	2.70
June	0.88	0.67	0.38	.....	0.38	0.12	2.43
Average	0.84	0.70	0.27	*0.25	0.36	0.14	2.56
Fiscal years:							
1905-1906	0.45	0.45	0.47	0.02	0.01	0.09	1.49
1906-1907	0.57	0.57	0.58	0.21	0.07	0.04	2.07
1907-1908	0.70	0.59	0.42	0.32	0.15	0.09	2.36
1908-1909	0.72	0.61	0.41	0.34	0.22	0.13	2.44

Cost Per Million Gallons Filtered—Continued

(*B*) Materials.

Month.	Office and laboratory.	Pumping station.	Filter Operations: Sand handling.	Filter Operations: Repairs, etc.	Parking (care of grounds) etc.	Main office.	Total.
1909.							
July	....	....	$0.01	.....	.....	.....	$0.01
August	$0.01	.....	.....	.....	$0.07	$0.01	0.09
September	0.05	$0.31	0.04	.....	0.01	0.03	0.44
October	0.08	0.11	0.13	.....	0.46	0.02	0.80
November	0.13	0.78	0.10	.....	0.34	0.02	1.37
December	0.03	0.17	0.05	.....	0.01	0.05	0.31
1910.							
January	0.12	0.74	0.14	.....	0.01	....	1.01
February	0.07	1.88	0.18	.....	0.01	0.01	2.15
March	0.26	0.28	0.01	.....	.....	.....	0.55
April	0.18	1.22	0.10	....	0.29	0.02	1.81
May	0.06	0.72	0.02	.....	0.11	0.02	0.93
June	0.54	2.23	.....	†2.16	0.46	0.04	5.43
Average	0.13	0.69	0.02	‡0.21	0.17	0.02	1.24
Fiscal years:							
1905-1906	0.04	0.59	0.02	.....	.....	.....	0.65
1906-1907	0.03	0.67	0.08	0.20	0.02	.....	1.00
1907-1908	0.05	0.54	0.04	0.07	0.06	0.01	0.77
1908-1909	0.10	0.69	0.05	0.18	0.18	0.02	1.22

(*C*) Totals.

1909.							
July	$0.73	$0.57	$0.87	.....	$0.31	$0.15	$2.63
August	0.76	0.64	0.59	.....	0.78	0.15	2.92
September	0.88	0.98	0.84	.....	0.52	0.20	3.42
October	0.80	0.77	0.86	.....	0.80	0.10	3.33
November	1.00	1.54	0.52	.....	0.72	0.20	3.98
December	0.93	0.86	0.32	.....	0.41	0.17	2.69
1910.							
January	0.93	1.37	0.47	.....	0.15	0.10	3.02
February	1.01	2.62	0.53	$0.07	0.12	0.17	4.52
March	1.18	1.09	0.31	0.07	0.18	0.13	2.96
April	1.11	2.05	0.59	0.03	0.65	0.15	4.58
May	0.92	1.44	0.38	0.03	0.66	0.20	3.63
June	1.42	2.90	0.38	2.16	0.84	0.16	7.86
Average	0.97	1.39	0.29	0.46	0.53	0.16	3.80
Fiscal years:							
1905-1906	0.49	1.04	0.49	0.02	0.01	0.09	2.14
1906-1907	0.60	1.24	0.66	0.41	0.09	0.04	3.07
1907-1908	0.75	1.13	0.46	0.39	0.21	0.10	3.13
1908-1909	0.82	1.30	0.46	0.52	0 40	0.15	3.36

* $0.02 for new sand-handling system.
† $2.02 " " "
‡ $0.16 " " "

Experiments in Preliminary Treatment.

Another subject to which a considerable part of Mr. Hardy's paper was devoted was a description of the several experiments in preliminary treatment which have been conducted by the department during the past few years. It had been anticipated in designing the present filter plant that preliminary treatment—sedimentation or something similar—would be desirable in connection with slow sand filtration, Messrs. Hering, Fuller and Hazen having suggested sedimentation, assisted by coagulation. There was, however, considerable prejudice against the use of a coagulant, and the bill providing for the construction of the filter plant made no appropriation for any such preliminary treatment. As stated in these columns a week or so ago, experience with the plant has indicated the necessity of some preliminary treatment if acceptable results are to be obtained. Those in charge of the filtration have realized this, and about four years ago began operating an experimental plant to determine the most effective method of preliminary treatment. The experimental plant consisted of three cylindrical concrete filter tanks, each 10 feet in diameter; these tanks being filled with the same gravel and sand which was used in the operating filters in order to duplicate as exactly as possible the large slow sand filters of the existing plant. In addition, appliances were provided for experimenting with various kinds of preliminary treatment. Two of these consisted of rapid filtration through different media, and a third consisted of sedimentation combined with coagulation. The size of the sedimentation tank bore the same ratio to that of the experimental filter tanks that the Georgetown and McMillan Park reservoirs do the large filters of the plant.

The first preliminary filter was very similar in construction and operation to a mechanical filter, but the sand was the same as that used for the main filters and consequently finer than that generally used in mechanical filters. The second preliminary filter was a Maignen "scrubber," consisting of a cylindrical concrete tank four feet in diameter and eight feet deep, which contained as a bottom layer 12 inches of cobblestones, on which were successive layers of 12 inches of egg-size coke, 12 inches of stove-size coke, 24 inches of nut-size coke, and 24 inches of sponge clippings.

These preliminary filters were operated at the rate of about 50 million gallons per acre per day, and the three slow sand filters treated the effluent from these at rates of from three to four million gallons per day.

These several tanks were connected together in pairs and designated by numbers for convenience in reference; the rapid sand filter with its slow sand filter being designated as No. 1, the Maignen scrubber and its slow sand filter as No. 2, and the coagulating sedimentation basin and its slow sand filter as No. 3.

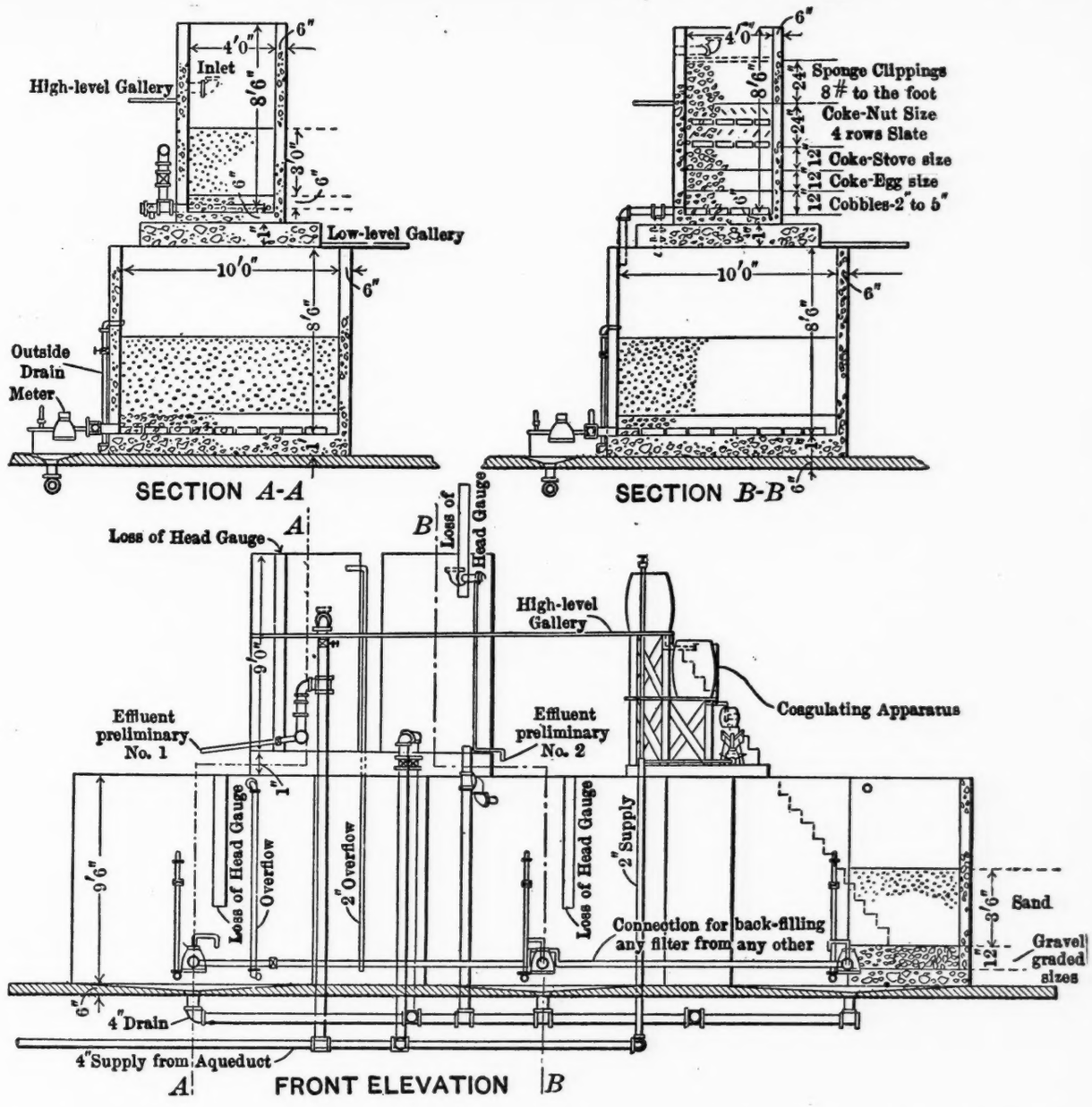
Plant No. 1 ran for from ten days to two weeks between washings at first, but this rapid rate carried the clay to a considerable depth into the preliminary filter, so that the runs gradually decreased in length until they were reduced to about three days. This, together with the necessity for using unfiltered water for washing, made it necessary to at length remove all the filtering materials and clean them. When it was possible to operate this preliminary filter at all it gave excellent results except at times of high turbidity, when the exceedingly fine mud passed through both preliminary and slow sand filters.

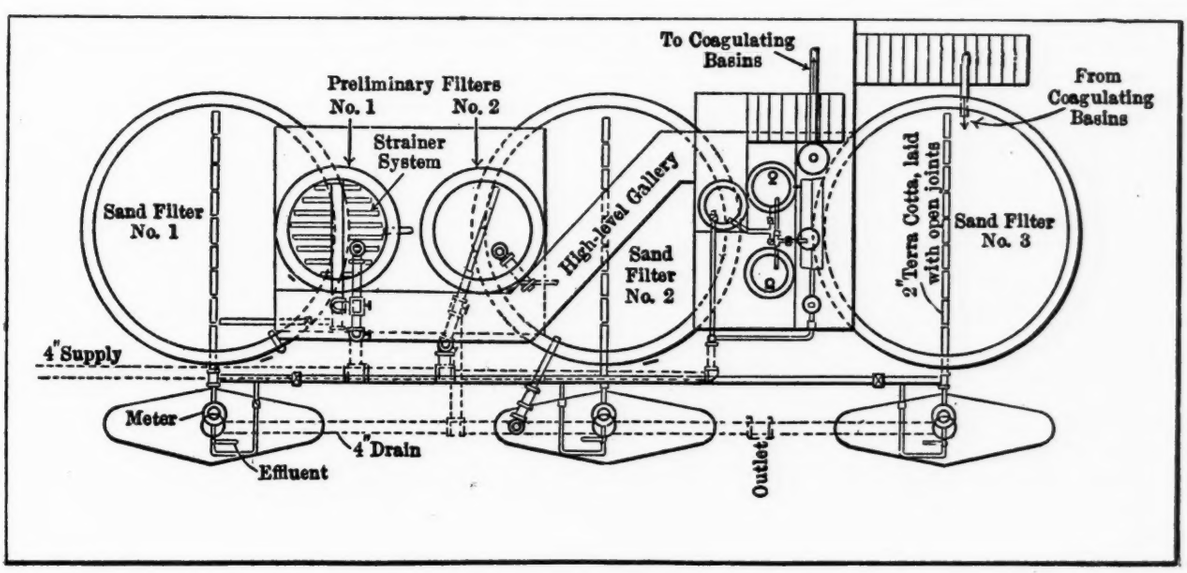
Plant No. 2 proved more economical and convenient in operation, but somewhat less efficient than No. 1. In operating this plant sulphate of alumina was used as a coagulant when the applied water contained too much turbidity to be treated satisfactorily by the slow sand filter. Plant No. 3, however, could be depended upon to produce good results under all conditions of turbidity. As an illustration of the operation of these three experimental couples with very turbid water, the figures of Jan. 16 may be given. On this date the turbidity of the raw water was 360, that of the effluent from preliminary filter No. 1 was 210, that from preliminary filter No. 2 was 247, and that of the effluent from the coagulating basin was 5. With these effluents applied to the corresponding slow sand filters final effluents were obtained from plant No. 1 with a turbidity of 37; from plant No. 2 with a turbidity of 42 and from plant No. 3 with zero turbidity.

Plants Nos. 2 and 3 were operated for about 18 months. After being operated about a year plant No. 1 was replaced with a Puech system of five filter units in series, which was no more effective than the simpler preliminary filters.

Experiments in Rapid Filtration

Another series of experimental tests was conducted for about 18 months, the object of which was to study relative efficiencies and costs of operating slow sand filters at different rates. For these tests cylindrical galvanized iron tanks four feet in diameter and nine feet high were used. The same sand was used for these as was used in the actual filter plant. These filters were operated at rates of one million, three million, six million, ten million, and, for a short time, thirty million gallons per acre per day; the last being reduced, after running for two months, to about seventeen million gallons. A sixth filter was started at the rate of one hundred million gallons, but it was found practicable to maintain this for only a few days at a time, after which the rate was kept as high as possible for the remainder of the run. The results obtained by this experimental plant were tabulated by Mr. Hardy in his paper, but no synopsis or discussion of the same is given by him. The table is presented herewith.





PLAN, ELEVATION AND SECTIONS OF EXPERIMENTAL FILTERS

SUMMARY OF RESULTS FROM TESTS OF EXPERIMENTAL FILTERS.

Filter number	1	2	3	4	5	6
Number of runs	3	6	11	12	25	28
Rate, million gallons per acre per day:						
Maximum	1.35	3.95	7.96	12.60	37.5	118.9
Minimum	0.62	2.30	3.73	5.77	6.68	7.1
Average	1.06	3.26	6.69	10.17	26.1	38.54
Length of run, in days:						
Maximum	233.5	150.5	75.2	90.9	48.71	39.83
Minimum	181.7	42.0	14.5	10.1	0.67	0.62
Average	206.4	109.6	48.89	40.5	14.41	12.61
Million gallons filtered per acre per run:						
Maximum	242.61	484.46	534.67	960.72	1,463.35	1,022.27
Minimum	202.60	135.66	93.79	92.57	19.53	53.32
Average	218.58	302.82	326.76	417.23	374.14	361.92
Cubic yards of sand removed per acre at end of each run:						
Maximum	269	269	672	1,612	2,420	3,360
Minimum	269	134	101	134	134	101
Average	269	213	272	392	583	635
Cubic yards of sand removed per acre per million gallons filtered	1.23	0.70	0.83	0.94	1.55	1.72
Average inital loss of head	0.07	0.19	0.51	0.78	3.88	5.38
Turbidity, influent:						
Maximum	120	120	120	120	90	100
Minimum	2	2	2	2	2	2
Average	20	20	21	22	18	19
Turbidity, effluent:						
Maximum	11	13	17	18	30	30
Minimum	0	0	0	0	0	0
Average	1	1	2	2	4	3
Percentage, reduction	95.0	95.0	90.5	90.9	77.8	84.3
Bacteria, influent:						
Maximum	180,000	180,000	180,000	110,000	180,000	37,500
Minimum	22	20	22	20	25	24
Average	4,800	5,100	4,500	4,200	6,900	5,900
Bacteria, effluent:						
Maximum	4,000	1,300	3,200	5,400	12,800	2,400
Minimum	2	3	1	1	2	2
Average	160	85	110	120	190	180
Percentage, reduction	96.7	98.3	97.6	97.3	97.3	97.0
Percentage of samples showing *bacillus coli* in influent:						
10 c.c.	41.2	44.2	42.2	59.2	41.9	45.2
1 c.c.	22.7	25.0	23.9	24.3	24.2	27.2
0.1 c.c.	10.5	12.8	11.9	12.3	13.5	13.2
0.01 c.c.	5.1	7.7	7.5	8.2	8.8	8.2
0.001 c.c.	1.2	1.4	1.2	1.5	1.0	1.0
Percentage of sample showing *bacillus coli* in effluent:						
10 c.c.	19.5	24.1	29.5	24.2	31.7	34.3
1 c.c.	10.0	13.4	12.0	13.8	15.4	16.1
0.1 c.c.	1.9	3.1	3.8	4.2	1.5	4.5
0.01 c.c.	0	0	0	0	0	0
0.001 c.c.	0	0	0	0	0	0
Cost per million gallons for sand handling.	$0.43	$0.25	$0.29	$0.33	$0.54	$0.60
Interest charges at 3%	6.85	2.25	1.12	0.73	0.32	0.22
Total	7.28	2.50	1.41	1.06	0.86	0.82

Coli tests presumptive.

From this table it will be noticed that, though the average rates for filters 5 and 6 were greater than that for 4, the average amount filtered per acre per run was less, filter No. 4 showing the maximum. Comparing the amount of sand used per million gallons filtered, we find that filter No. 2, with a rate of 3¼ million gallons per acre per day, showed the minimum amount. It is noticed in the figures for initial loss of head that in the case of the first four filters this loss is roughly proportional to the rate of filtration. In reduction of turbidity it is seen that filter No. 4 was even more efficient than No. 3, although the rate was about fifty per cent higher. In reduction of bacteria there was remarkable similarity between all the filters, those with the highest rates showing even better results than No. 1 with its very low rate. The tests for B. coli, however, showed much more favorable results by the low rates than by the high ones. Finally, the cost for handling sand was the minimum for filter No. 2 with its rate of 3¼ million gallons; but if the interest charges on the cost of construction, taken at 3 per cent, be added, the total cost was in favor of the higher rates. Judging from these figures alone it would therefore appear that where turbidity was an important item filter No. 2 with its rate of 3¼ million gallons per acre per day would be desirable, and the total cost would be a little more than one-third of that where the rate is only one million gallons. If, however, turbidity is not an important item, rates as high as ten million gallons would seem to be practicable, the total cost at this rate being a little less than one-half that when the rate was 3¼ million gallons.

Municipal Journal and Engineer

Incorporated

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Telephone, 2046 Bryant, New York
Western Office, 929 Manadnock Block, Chicago

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SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba.....$3.00 per year
All other countries..... 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the Act of Congress of March 3, 1879.

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FEBRUARY 1, 1911.

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Furnishing Data on Request

ATTENTION is called on page 155 of this issue to the paucity of data concerning the length of useful life of water works structures, and the same remarks apply to most other municipal utilities, pavements being possibly the least open to this criticism, although concerning even these the data are not sufficiently numerous or intelligently classified. As is stated in the article referred to, it is fortunate that a committee of the New England Water Works Association is endeavoring to collect accurate data concerning the life of water works structures. This is a matter which no individual of however wide experience can adequately work out from observations made by himself, nor have many individuals the time to collect such data from all available sources and compile them. And yet it is very desirable that this information should be made available; this being illustrated by the fact that, in the absence of definite information on the subject, it has been necessary to estimate it—in some cases to merely guess at it—in order to make calculations required by law or by prudent financing.

Even a committee supported by the prestige of a society of high standing and devoting much valuable time to the research can not, however, secure the data if the necessary figures have not already been recorded by the various water works superintendents and engineers throughout the country. This is one of the many cases where the general good of the profession is dependent upon the efforts of the many individuals in collecting and recording data which may not be of immediate value to the individuals themselves but which require only the slight personal sacrifice necessary to record the information asked for by such committees and furnish it to them when required.

To a large extent the collecting and compiling of data of this kind are in the nature of a labor of love, and we bespeak for all individuals or organizations which are carrying on such investigations for the general benefit of the profession prompt and full replies to questions asked. The probability is that those who are asking for the data are making a much greater sacrifice of time and energy than those who furnish them.

The City Transportation Problem

WE have previously referred to the efforts made by certain cities to limit or entirely prevent by law the crowding of street cars and the difficulty, if not impossibility, of accomplishing much in this way. As stated on another page, crowding is actually prevented in England and on the Continent by simply preventing the entrance of any more passengers after the cars are reasonably well filled. It might at first thought appear that the same methods could be adopted to produce similar results in this country. We believe, however, that a more careful study of the dissimilarity of conditions in the two countries would indicate that this does not necessarily follow. In the first place the crowds to be transported in the larger cities of this country are in most cases much greater than in any of the English or German cities. In the second place in this country a smaller percentage of those who make up the passengers prefer walking to riding for the sake of economy or other reasons. And in the third place the American riding public is not, we believe, as easily constrained to substitute the will of a corporation for their own desires as is that of European countries. There are other obstacles to the success of this plan in the United States, but we believe that those mentioned will be found practically insuperable.

Liability for Water Supply

IN a recent decision of the Supreme Court of New York State (Oakes Manufacturing Company vs. City of New York), it was held that "Where a municipality maintains a public water system it is acting as a governmental agency and is therefore not liable for negligence in maintaining the water supply." Also that the selection of the source of supply is "the exercise of a discretion judicial in its nature and imposed no liability on the consolidated city for damages." We understand this to mean that neither the city nor individual commissioners can be held responsible for an error in judgment in selecting the supply. It has also been held that there is no liability on the part of the city for sickness or death occasioned by impurities in the supply, even though it should have been for many years aware of the existence of such impurity and have made no effort to remedy conditions; although a contrary view was taken by the Minnesota supreme court, according to a news item in our January 11 issue.

It seems to us that in taking this view of the responsibility of municipal officials the courts have been undesirably lenient. Much the same view has been held concerning the responsibilities of a director of a corporation or bank, but there seems to be a tendency at present to hold such officials to a more strict accounting. We believe that there are many arguments in favor of a similar change in opinion concerning the duties and obligations of city officials such as water commissioners, and that the fact that quality is more important than quantity, which has become generally realized during the past decade or so, should be an important consideration in ruling on the duties of commissioners in providing the supply.

HYPOCHLORITE AT HARRISBURG

The attention of Superintendent George G. Kennedy, of the Harrisburg, Pa., Water and Lighting Department, having been called to the comparatively poor results obtained in the use of hypochlorite in connection with the water supply of Niagara Falls, he has sent us the records of the bacterial reduction effected by the Harrisburg department during 1910 in treating two water supplies obtained from sources near that city. In one case the treatment was continued during March and April and tests taken on an average every two days. In this test .08 grains of hypochlorite per gallon were used. The number of bacteria per c.c. in the raw water averaged 8,833, the minimum being 900 and the maximum 29,750. In the treated water the bacteria ranged from 16 to 760, the average being 73. Tests for B. coli resulted as follows: Of 95 tests of raw water, 89 were positive; of a similar number of tests of treated water but four were positive.

A test made of another water between August 8 and December 14, in which the amount of hypochlorite used was .075 grains per gallon, showed the following results: Bacteria in the raw water averaged 1,117, ranging from 600 to 5,740. Those in the treated water averaged 37, ranging from 16 to 95. Of 133 tests for B. coli the raw water showed positive results in 132 cases, but the treated water in only four cases. The hypochlorite varied considerably in available chlorine, the average of this being about 26, but ranging from 15.8 to 41.76. These two tests show reduction in bacteria of 99.2 per cent and 96.9 per cent respectively.

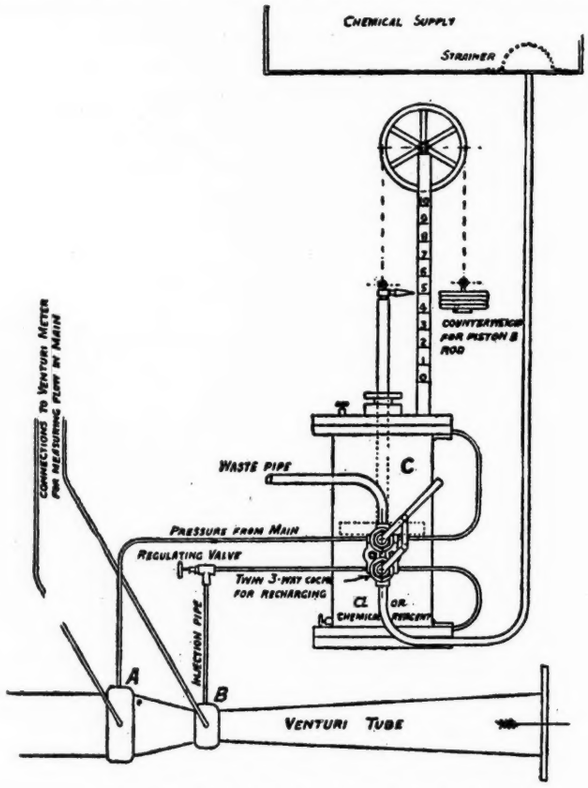
In regular use at the plant, the hypochlorite is passed through an orifice box, where the supply is regulated; and from this through galvanized iron pipes to a grid in front of the 42-inch intake pipe.

PLANT FOR APPLYING HYPOCHLORITE

A new method of applying hypochlorite to water supplies at rates proportional to the flow of water has been introduced in Canada and is described by the *Canadian Engineer*, from which we abstract the following:

As the illustration shows, the principle employed by the Venturi meter is used to regulate the flow, this principle being that, when water is flowing, the pressure at the large section *A* is always greater than that at the smaller section *B*, the latter becoming even a negative pressure under high velocities. The apparatus consists of a cylinder *C*, the top of which is connected to the larger end of the Venturi tube by a small pipe which thus transmits the pressure to the top of the piston which works in the cylinder *C*. Another pipe connects the lower part of the cylinder with the contracted section or throat of the Venturi tube. The piston is provided with a counter weight, and the piston accordingly rises or falls in the cylinder as the relative pressures in *A* and *B* change. The chemical solution is brought from the tank by a pipe which connects by a three-way valve to the pressure pipe from the throat of the Venturi tube; and a similar three-way valve connects a waste pipe with the other pressure pipe. By turning both the three-way valves so that the pressure from the Venturi tube is shut off and the waste pipe and chemical supply pipe are opened, the hypochlorite solution, because of the head due to the elevation of the tank, enters the cylinder below the piston, raising this to its highest point, the water above the piston being discharged through the waste pipe. The three-way valves are then closed to the supply and waste pipes and opened to the pressure pipes, when the greater pressure above the piston forces the chemical solution through the small pipe connecting with the throat. The pressure forcing this out, and as a result the amount of solution applied, are proportional to the excess of pressure at *A* over that at *B*, and consequently to the amount of flow in the main. Theoretically, the amount of solution supplied will vary directly as the amount of flow through the Venturi tube; although the friction in the apparatus will probably introduce a slight variation in this.

When the charge in the cylinder has been exhausted it must be recharged in the manner above described. The apparatus shown in the diagram is intended for a treatment of 1,000 gallons per hour and at this rate will need recharging but once



APPARATUS FOR APPLYING HYPOCHLORITE

in 24 hours. Although apparently not provided for in this diagram, it would be extremely simple to have the indicator automatically ring a bell when the piston is approaching the bottom of the cylinder, thus calling attention to the necessity of recharging.

COAGULATING NON-ALKALINE WATER

The operation of the mechanical filter plant at Augusta, Ga., was described in the report of Superintendent John H. Ferguson for the year ending November 30, 1910, including the method adopted for overcoming a trouble more or less commonly experienced in several cities, that of the water becoming low in alkalinity and the resulting failure of the alum to properly coagulate. At several times during the past year the water at Augusta became very turbid and low in alkalinity, at times as low as four parts per million. As it requires eight parts to properly decompose one grain of alum, and 1½ grains per gallon were being used at that plant, it was necessary to add about ten parts per million of alkalinity, which was done by the addition of lime.

It had been customary to apply lime at the filter intake from a small and very crude tank, and the lime thus had very little time in which to work on the water and reached the filters in a caustic state. This seemed to prevent the formation of the coagulent cover on the filters for some time after the beds were washed, causing the filters to run muddy water long enough to stain the water in the basin. Mr. Ferguson then determined to introduce the lime into the force main at the point of discharge into the basin, and a preliminary test of this proved so successful that he built a lime house at this point and installed two 700-gal. tanks, properly connected with the mains. This made it possible to control the alkalinity at all times, and the water reached the filter plant in the proper condition to take the alum. The attendant at the filters is furnished with the necessary apparatus for determining, by titration, the proper amount of lime required from time to time.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Greater Appropriations for Michigan Highways

Lansing, Mich.—State Highway Commissioner T. A. Ely will ask the Legislature for an appropriation of $250,000 annually for the ensuing two years to conduct the highway department and provide for State rewards on good roads. The last appropriation was for $150,000 annually, and the work of the department consumed the entire amount and the unexpired balance remaining in the treasury when Commissioner Ely was appointed was but $57,000. About 300 miles of State award road was built during the last fiscal year, and already applications are on file for 250 miles for the coming year, and it is estimated that the full amount of the appropriation asked for will be necessary to provide for the natural growth of the business of the department for the next two years.

Valuation of Turnpike Made

Milford, O.—A value of $10,937.50 was placed on the nine miles of the Cincinnati, Columbus and Wooster turnpike, in Clermont County, by a special jury that spent two weeks hearing the condemnation proceedings at Batavia. The section of the pike condemned extends from the Hamilton County line in Milford to Goshen on the northern boundary of Clermont County. A verdict returned in Hamilton County a few days ago fixed a value exceeding $5,000 per mile for the portion of the pike in the latter county. The Clermont verdict fixes the price at slightly more than $1,200 per mile. The estimates of the value of the road given by the various witnesses varied from $1,000 to $10,000 per mile.

Plan for Paying for Repaving of Thoroughfares

Newark, N. Y.—Chief Engineer Sherrerd has submitted to the Board of Public Works a draft of a bill designed to apply to the method of meeting the citys portion of the expense of repaving main thoroughfares. The commissioners of assessment are given the power to decide what part of the expense shall be assessed against the property owners and what part shall be paid by the city. The idea is that where traffic is greater the property owners' share should be less. The city would, according to the bill, be authorized to issue 20-year bonds to pay for its share of the expense—the idea being that the pavement will last that length of time.

To Resume Paving Repairs

Philadelphia, Pa.—Having recovered from the shock of the admissions of favoring contractors on paving repair measurements made by Highway Commissioner Brooks, in the Bullitt suit to annul the paving repair contract with the Filbert Paving & Construction Company, the officials got together in Mayor Reyburn's office and discussed the future pitfalls and how to avoid them. If there are any more queer contracts executed at a choice of prices either at 20 or 75 cents a yard, the measurements of the contractor's work and the voucher for the same will be computed by a district surveyor and not by anyone connected with the Bureau of Highways. The Mayor conferred with Director Stearns, Chief Benson and Commissioner Brooks. It was decided to have the Filbert Company resume the asphalt repair work under its contract which was halted when the Bullitt suit was begun. The company will be directed to resume operations at once. The Mayor suspects some contracting interests are seeking to discredit his municipal street repair corps and his municipal asphalt "mixer," which, it was reported to him, would not "mix." The Mayor said the machine is to cost $2,000, and was being tested, but is not paid for. He told Thomas T. Haines, in charge of the repair corps, that the mixer will have to work properly or it won't be paid for. The Mayor advised Haines to engage an expert to operate the mixer. The Mayor says all small repairs and small jobs on streets will be done by the municipal repair corps during 1911.

Thirty Miles of Cement Walks

Crowley, La.—Contractor de Jersey, who has the contract for laying the cement sidewalks for the city, has completed about 8 miles of cement sidewalks for the city, and will, on the completion of the original contract, immediately begin on the second contract, the completion of which will bring the total amount of sidewalks up to 15 miles. There are about 40 miles of sidewalks in Crowley, and it is probable that 30 miles of cement sidewalks will be laid by the City Council before the work is discontinued. There has been no complaint against the laying of the walks by the city.

To Raise Great Fund for Roads

Denver, Col.—An attempt is being made in Colorado to raise $1,500,000 for good roads, the Legislature to give one-third of the amount and the counties to give two-thirds, and the proposition seems to have a chance of becoming a realty. In Washington the counties are only asked to duplicate the amount pledged by the State.

Will Ask Lower Rate on Hydrants

Everett, Wash.—The Council Committee on Light and Water proposes to wait upon the Everett Railway, Light & Water Company and ascertain if it will not be possible to secure a reduction in the charge made by the company for supplying water for the street hydrants. This plan was discussed and decided upon by the committee, though no date was set when the conference should be held with Manager W. I. Sturtevant. There are 163 hydrants scattered about the city. The monthly cost for water to serve these hydrants is $668, or about $8,000 yearly.

Bridge Stood Test

Federalsburg, Md.—The new reinforced concrete bridge over the Nanticoke River here was tested last week by the State Roads Commission. Two 12-ton rollers passed over it safely, and the structure was pronounced perfect in every way. A lot of residents unfamiliar with concrete gathered to see the bridge fall and, of course, are agreeably disappointed now.

Too Many Duplicate Names

Houston, Tex.—In order to end the confusion resulting from having many duplicated street names, and a few instances of the same name being used for three streets, a committee is now at work selecting new designations for some of the streets of the city.

Cinnamon Trees for New Orleans Streets

New Orleans, La.—At a recent meeting of the Parking Commission, Dr. Joseph Holt showed a specimen of the cinnamon tree of Ceylon, which he discovered in an old nursery uptown. It attracted his attention because after the sharp freezes that have even nipped the leaves of the live oak its foliage remained as bright and fresh as if there hadn't been a frost. It grows 25 to 40 feet high, and the commission is going to try to get stock to begin its planting, as it will make a very important addition to the evergreen foliage of the city.

Tarring Shell Roads

St. Augustine, Fla.—An experiment is being made by Street Commissioner Crary with a tar binder on the shell paving on South St. George street. The results of the test prove to be entirely satisfactory and it may solve the problem of making the shell pavement more lasting at slight expense. Six hundred square yards was treated at a cost of four and one-half cents a yard. The surface was first scarified and then graded to a crown. While the shell was in this loose condition gas tar was applied and the street was then rolled with the steam roller. There is every indication that the street will now shed the water better in rains and that the gas tar will act as a binder, preventing the shell from grinding up and blowing away.

Chert as a Material for Paving Condemned

Chattanooga, Tenn.—Chert as a material for paving local streets is just now arousing so much condemnation from Chattanoogans that an organization has been formed in the hope that certain contracts that have already been let can be changed so that chert may be eliminated and some better material substituted. The new organization was temporarily formed last week at the Manufacturers' Association, where a number of representative citizens gathered to discuss the matter. The name Chattanooga Streets Improvement League was selected, and two committees were appointed. The committee on paving bonds and streets is composed of Samuel Bosworth Smith, Edwin W. Stuart and H. B. Moseley. It will be the duty of these gentlemen to see what can be done about substituting a better material instead of chert for the paving of a number of streets for which legislation has already been initiated, and also to see if additional bonds cannot be issued for the increased cost of a more permanent material.

Aerial Bridge Is Decided Success

Duluth, Minn.—The report of the Board of Public Works for 1910 comments upon the success of the aerial bridge, which cost $6,338.80 to maintain during the year. The traffic has increased greatly since it was installed, but it has been a decided success, little trouble being experienced.

Erie Paving Record in 1910

Erie, Pa.—The paving done last year reached a total of 56,214.27 square yards of asphalt and 38,147.65 square yards of brick, with 33,771 feet of curbing, the entire cost being $163,003.97. The city has 51.7 miles of paved streets.

Cost of Oiling Streets in Hartford

Hartford, Conn.—City Engineer Frederic L. Ford, in response to a request from President John E. Moore of the New Britain Board of Public Works, regarding the cost of oiling streets, says that his department has found that the cost for the season for oiling streets with light road oil similar to dustoline or valvoline is approximately 3 cents per square yard. With asphaltic oil containing 65 per cent asphalt it costs from 5 to 6 cents per square yard. No method of assessment for such oiling has as yet been devised for the city of Hartford.

More for Repairs Than New Roads

Rochester, N. Y.—A statement from the State Highway Commission on the amount of work done on good roads in Monroe County in 1910 by the Commission has been received by County Superintendent J. Y. McClintock, and this shows that more than twice as much was spent on repairs and maintenance in this county as was spent on construction of good, new roads. The total amount for maintenance and repair was $251,524.79, and of this sum $39,418.21 was expended in the town of Chili, this being the largest sum spent in any town. The smallest amount was spent in Ogden, $856.05.

Disagree Over Apportionment of Fund

Sacramento, Cal.—When the State Highway Commission is appointed and organized, one of its difficult tasks will be the apportionment of the $18,000,000 road fund to the satisfaction of the north and south, which sections are clearly opposed in their demands for shares of the highway bond issues. Four northern counties seek an allotment of from $500,000 to $1,000,000 for the rebuilding of the old El Camino Real, from San Francisco around the bay, nearly 400 miles to Sausalito. The plan received the official approval of the northern California delegation, and when it became known among the southern legislators that the north sought the first fruits of the big fund there was much talk of Los Angeles County making pressing demands for immediate reimbursement for the $3,000,000 which that county already has spent on its roads.

All Graded Streets Have Sidewalks

Waterloo, Ia.—During 1910 54,026 square yards of asphalt paving were laid, about three miles of thirty-foot roadway. The cost was $105,806. Of curbing 37,112 feet were laid at a cost of $22,504. Of cement sidewalks 21,916 linear feet were laid at a cost of $9,266. Practically every graded street in the city is now provided with a cement walk.

SEWERAGE AND SANITATION

New Bedford's Sewage Problem

Boston, Mass.—In its annual report to the Legislature, the State Board of Health made reference to the sewerage conditions existing at present in New Bedford and of the progress that is being made to remedy them. The board characterizes the present conditions in the river and in Clarks Cove as "serious nuisances." As to the plan proposed for emptying the sewage in the bay southeast of Clarks Point, the board states that there is no doubt that it will be effectually disposed of.

Collingswood Sues Sewerage Company

Collingswood, N. J.—The Collingswood Board of Health has directed the Borough Solicitor, Ralph Kellum, to apply to the Court of Chancery for a rule to show cause why an injunction should not issue restraining the Collingswood Sewerage Company from continuing the operation of its plant, it being contended that as now operated the plant is a public nuisance. It will be alleged in the bill that residents in the immediate vicinity of the plant have been nauseated and made sick by offensive odors and compelled to keep their windows closed.

Pasadena to Have Big Storm Drain

Pasadena, Cal.—This city is now constructing an immense storm drain to carry off flood waters and prevent further washing out of streets. At its largest section the drain is nine feet eight inches wide on the inside and seven feet seven inches high. It is three miles long and will cost, when completed, $163,000. The initial order of cement called for 10,000 barrels, and this will be but a starter on the work. It is expected that the drain will be completed by next July.

Paterson to Sign Sewer Contract

Paterson, N. J.—Mayor McBride has been authorized to sign, on certain conditions, the contract submitted by the Passaic Valley Sewerage Commission, binding the city to become a party to the trunk sewer. The instructions given the Mayor contain a very important provision, which was inserted to protect the taxpayers of this city from being placed in the position where they will have to go down into their pockets for unlimited amounts of money to pay their proportion of the cost of the big drain. The instructions are embodied in the following resolution: Resolved, That the Mayor be authorized and directed, on behalf of the city, to sign the sewer contract submitted by him at this meeting and as proposed by the Passaic Valley Sewerage Commission, with the addition of the following clause: "And it is further provided that the actual work contemplated in this contract shall not be commenced, nor shall the Commission become obligated to any contractor for any part of the said work until such time as the Commission shall have received actual, bona fide offers from a reputable and responsible contractor or contractors to complete said work within the sum of $12,250,000, including the costs of rights of way and other necessary property and equipment."

Sanitary Drinking Fountains

Louisville, Ky.—Drinking cups in Louisville's public schools have been unanimously condemned at a joint meeting of the Board of Health and the Board of Education. It is proposed to supplant the cups with hygienic drinking fountains.

City's Largest Sewer Finished

Schenectady, N. Y.—The largest piece of surface sewer work ever undertaken by the city of Schenectady, that of laying the five-foot concrete drain along the Plaza, in the Eleventh Ward, from West alley to Waverly place, crossing Glenwood and Park boulevards, is about completed. The total length is about 1,000 feet. All that Contractor W. D. Goodale has to do now, so far as the city's work is concerned, is to repave the Plaza and trim up the edges of the thoroughfare. The total cost to the city will be about $26,000. Besides being the largest single surface sewer ever constructed by the city, the big drain also has, as part of it, the largest concrete arch ever built here for sewer purposes. The arch is necessary to carry the sewer over one of the depressions in its course.

WATER SUPPLY

Lake Ashburton Opened

Baltimore, Md.—With a twist of a wheel and the opening of the flood gates, Mayor Mahool January 18 sent the water of Lake Ashburton, the new high-service reservoir at Forest Park, coursing through the pipes into the homes of nearly 150,000 people. The dedication took place in the presence of a crowd of people after the reservoir had been turned over to the city by United States Senator Thomas S. Martin, of Virginia, Vice-President of the Lane Bros. Company & Jones, the contractors who built it. The water reaches the reservoir from Lake Clifton through the Mount Royal Pumping Station, and on January 11 the lake was filled. The neighborhood supplied by the reservoir is known as the western high-service district, and includes a section of the city about a mile and a half wide, running from Dolphin street to Druid Hill Park, diagonally southwest from Jones' falls to the western and southern limits of the city.

Cleveland to Try Free Water System

Cleveland, O.—The free water system is to be tried in Cleveland. It was suggested some time ago by Mayor Baehr, and since then Water Works Superintendent Smith has been working out the details of putting the system to a practical test. Under the free water system expenses of the department will be met with money raised by taxation. It shifts the payment for water from the individual consumer to the taxpayer. Information gathered by Superintendent Smith from many cities which now have free water shows the system to be successful. The charge that the water consumption would be more than doubled by the free water system is not sustained by information Smith has gathered.

Faucets of Free Hydrants Stolen

Louisville, Ky.—The small boy has brought the Louisville Water Company and the Board of Public Works face to face with a serious problem. As quickly as practicable the Health Department is condemning public pumps, the Board of Public Works is ordering them removed and the water company is substituting them with hydrants. The brass faucets of the public hydrants have caught the fancy of the small boy of Louisville, and he has been playfully and gleefully removing them about as fast as they were installed. Each theft of a faucet results in a neighborhood being deprived of free water until a new one can be substituted. The removal of a faucet often makes it necessary for the persons of a neighborhood dependent upon free water to walk several blocks to secure it.

Seeking New Water Supply

Newark, N. J.—That the East Orange Board of Water Commissioners is by no means confident that its present source of supply will in the end be sufficient for the city's needs is demonstrated by the fact that, according to the annual report of that body, application has been made to the State Board of Water Commissioners for a proportionate interest in the Wanaque watershed, with Newark, which has made a similar application. The situation is expressed in these significant words: "It is probable that we shall, in the end, be compelled to rely on surface water from the streams of the northern part of the State for any considerable addition to our supply." The report goes into the situation which became acute last summer, when wells in the neighborhood of the pumping plant at White Oak Ridge began to go dry and the suits against the city, which had already begun, rapidly multiplied. The decision of the Supreme Court, which was to the effect that sufferers from the loss of water on the land they occupied might continue to recover for damages by diversion, forced the city to take prompt steps to protect itself, and the proceedings already under way to acquire adjacent lands were the result.

Use of Hypochlorite of Lime Discontinued

Niagara Falls, N. Y.—The Board of Water Commissioners voted to discontinue the use of hypochlorite of lime in the city water. The process met with fair success until cold weather set in, when the taste of chlorine could be discerned in the water and it led to considerable complaint.

Water Company Given Chance to Increase Supply

Schuylkill Haven, Pa.—The quo warranto proceedings brought by the Attorney-General of the State to forfeit the charter of the Schuylkill Haven Gas & Water Company for failure of the company to furnish sufficient water to Schuylkill Haven will probably be discontinued. As a result of consultation of attorneys the case, scheduled for trial in court, will not go on, but instead the water company will be given the opportunity to get the additional water facilities, which the borough was about to buy for $50,000.

Seattle Water Rate Fight

Delaware, O.—After litigation of nearly two years the City Council and the Delaware Water Company have finally gotten together on a contract, upon which there were compromises by both sides. The contract is for hydrants and a rate of 7 cents per thousand gallons for water for street sprinkling and sewer flushing.

Canal Work May Injure Seneca Falls Water

Seneca Falls, N. Y.—One of the most difficult propositions encountered by barge canal builders when they reach the foot of Cayuga Lake will be to find a way to avoid injuring the water supply of this village. Hermon A. Carmer, Superintendent of the Seneca Falls Water Works Company, says that he has taken the matter up with the barge canal engineers and they have advised him that within a short time they will know what method will be pursued. The Crowell-Sherman-Stalter Company, of Cleveland, will begin work in a few days on its contract to dredge 17 miles from the main canal northwest of Montezuma to deep water in Cayuga Lake. The water company's new intake pipe, recently laid on the lake bottom, extends nearly half way across the lake and ends at just about the point in the lake where the barge canal plans call for dredging. Mr. Carmer thinks that a mechanical filtration plant might be installed to remove any roil from the water while the dredging was in progress.

Health Board Condemns City Water Supply

Shreveport, La.—At a recent open meeting the City Board of Health adopted a resolution condemning as unhealthful and unsanitary the present source of the city water supply, and served notice on the city administration to make efforts within 30 days to remedy the trouble. If the Commissioners fail to act the Board of Health will then call citizens together and urge them to correct the evil.

Los Angeles Aqueduct Construction

Los Angeles, Cal.—Chief Engineer William Mulholland has made a verbal report of the work accomplished in 1910 on the aqueduct. If the work continues in the future at the same rate as that which was maintained during 1910, it will require 18 months more to finish. The construction work for the year amounted to 55 miles, but there was a considerable period during which work was practically at a standstill, and for several months it was retarded by shortage of funds. In spite of this, the progress of 55 miles stands as the record year of the project. The big Elizabeth Lake tunnel, 5 miles long through solid rock, is so nearly completed that the miners who are working toward each other from each end sometimes fancy they can hear the opposing crew through the thin wall of rock. Miles and miles of tunnels, long and short, have been bored and lined in the Jawbone Mountains, and now stand idle, only awaiting the water. Practically all that remains to be done is straight-away ditch digging, which can be accomplished by the battery of steam shovels. It is simply a question of time. A steam shovel can move so many feet a month. There are so many steam shovels and so many miles. The greater part of the work still remaining to be done is at the north end of the aqueduct. The Haiwee dam, which will create the immense Haiwee reservoir, is nearly completed. Work is progressing rapidly on the intake, where the water will be transferred from the Owens River to the huge canal which will carry it into the Haiwee regulating reservoir at the lower end of which the conduit proper begins. The aqueduct, when completed, will be 215 miles long. Of this distance 129 miles has been covered. In building 55 miles last year the aqueduct forces removed 2,500,000 cubic yards of rock and earth, used 300,000 barrels of cement and spent about $4,000,000.

Impure Water Cause of Typhoid at Niles

Niles, Ohio.—In view of the prevalence of typhoid fever in Niles Dr. H. V. Ormeroid, Health Officer, was asked to make an advisory statement as to the best precautionary measures against the contraction of this dread disease. He said that the simplest and best preventive is the old one—to boil all drinking water and water used in cooking and for similar domestic purposes, unless one is absolutely sure that it is pure. The city water and that from open wells or cisterns into which surface water empties should positively not be used without its first having been sterilized by boiling. Sixty cases of typhoid fever are reported here at the present time, and it would seem that it would pay to use every precaution to avoid an increase of the epidemic.

Wants City to Buy Pumping Plant

Pittsburg, Pa.—The city is to be asked to purchase the pumping station of the Monongahela Water Company, in the West End. The water company expects to show that Councils should appropriate money for this purpose in consequence of an agreement made between them and the city some time ago, when a Councilmanic bond issue of about $70.000 was voted, the proceeds of which was to be used to buy the lines of the company in Esplen and Elliott. It was made necessary to buy these lines when Elliott and Esplen were annexed. At the time of the agreement the water company expected to sell their pumping station to one of the three railroad lines near which it is situated. For some reason this deal was not consummated. The water company now claims that its pumping station is of no value, since the city has bought its lines and no one else wants to buy the plant. An ordinance will soon be introduced asking that the city purchase this plant.

Majority Favor Municipal Water Plant

Plainfield, N. J.—The question of the advisability of establishing a municipal water plant in this city, or purchasing the plant of the Plainfield-Union Water Company, was fully discussed at a meeting held for the purpose in the Council chambers under the direction of the special Water Committee, of which Councilman F. E. Mygatt is the chairman. The weight of the argument was in favor of a municipal plant, and a majority of those present, either by applause or by word of mouth, indicated that they were in favor of the city controlling the local water supply.

Would Reduce Cost of Pumping Water

Fort Worth, Tex.—A new type of air pump which the inventor declares will reduce the cost of pumping artesian water to one-half of what it is at present was tested last week on one of the big wells in the city artesian system. The pump is the invention of Bryan Obear, of St. Louis, and the test was made under his direction and in the presence of a number of city officials and officers of several companies owning artesian wells. The pump works on the principle of air expansion, the air being supplied from a compressor. It will operate on low pressure, and this is expected to result in the saving. In the test it lifted water from a depth of 270 feet at the rate of 220 gallons per minute, while the ordinary air compressor pump will raise but 150 gallons per minute from the same depth. It required but 350 cubic feet of free air each minute to raise the water, while an ordinary compressor required 550 cubic feet of free air at a pressure of 90 pounds against a pressure of 61 pounds for the new type. Perry Pennington, a prominent engineer who viewed the test, estimates that the new pump would save the city the sum of $127,000 annually if attached to the various wells making up the city artesian system.

Helena Will Buy Water Works or Build

Helena, Mont.—The City Council has decided to give the Helena Water Works Company until March 6 to submit a proposition to sell its plant to the city at a reasonable figure. If such offer is not received within that time a resolution adopted provides that thereafter the company is to be considered a nonentity and the Council is to proceed to construct a plant for the city, $650,000 worth of bonds to be offered on April 1 and contracts to be awarded on April 24.

Meters Decrease Consumption of Water

Elkhart, Ind.—Reports compiled by the Elkhart Water Company indicate that a total of 1,163,215,196 gallons of water were pumped by it for consumption in Elkhart during 1910. The daily average was 3,186,891 gallons, or about 165 gallons per inhabitant. The greatest amount any one month was in July, 142,115,314, or a daily average of 4,584,365. The next highest month was August, 124,457,586. Superintendent Crull stated that there has been a slight decrease in consumption due to a big increase in the number of water meters now in use in the city. There is now a total of about 1,000 meters in operation in Elkhart, 400 of which were installed during the past year. The company provides water for about 4,000 taps in Elkhart.

Purer Water for Des Moines

Des Moines, Iowa.—The new ordinance fixing the standard of the city water supply, drafted by Mayor Hanna and City Bacteriologist W. A. Guild, and which is modeled after the Omaha ordinance of the same nature, seems likely to pass. The water company will be given three months in which to raise its supply to the standard set by the ordinance. The water must be free from gas-producing bacteria, colon bacilli or other pathogenic bacteria. The number of bacilli must never exceed 50 per cubic centimeter. The chemical factors must never exceed the following proportions: Parts per million, total solids, 450.00; free ammonia, .04.

Filter Plant Needs Bacteriologist

Escanaba, Mich.—At a recent meeting of the Common Council Dr. H. W. Long, City Health Officer, read a letter from Dr. F. W. Shumway, Secretary of the State Board of Health, in which the writer stated that he had written W. J. Hatton, Superintendent of the Escanaba Water Company, requesting him to secure a competent bacteriologist to take charge of the filtration plant and retain his services until the plant can be properly operated by a person not versed in bacteriology. With his letter Dr. Shumway enclosed a report made to him by Prof. Thomas S. Ainge, giving the results of the latter's recent inspection of the filtration plant and investigation of general health conditions here.

STREET LIGHTING AND POWER

To Put Lighting Brackets on Trolley Poles

Baltimore, Md.—In keeping with the "City Beautiful" idea, as advocated by the civic center plan, Superintendent of Lamps and Lighting McCuen announces that he has made arrangements with the Gas Company and the United Railways to use their poles for the lamps on Light street, between Pratt and Lee streets. To avoid the duplications of poles when the new tracks are laid down the middle of Light street, Mr. McCuen will place his lamps on the same poles used by the trolley. Artistic fixtures will be used and a new style pole will be necessary.

Fine Showing of Columbus Light Plant

Columbus, O.—Nearly $10,000 was received from the sale of current from the municipal electric light plant, according to the annual report of Superintendent Gamper to the Mayor. In his report the electric light plant superintendent states that during the year the plant received for expenditures $81,518, and that the expense of operating the plant and lighting the city was $52,243, while the expenses of extending the plant were $24,643. The net expenditures of the plant were $63,611.42, leaving a balance unexpended of $17,907. The average number of arc lights in service was 2,340, the number of tungsten lights equal to arc lights, 60, and the number of arches burning equivalent to arc lights, 200, or a total of lamps, 2,600. The net cost of each arc lamp was $16.28, according to Mr. Gamper.

Buys Lighting Plant

Frederick, Md.—A further step in the direction of municipal ownership has been taken by the purchase by the Town Commissioners of the Citizens' Electric Light & Power Company. The price was $19,846.72. Already Frederick owns its water works and an electric plant for the city lighting.

Lumber Company Furnishes City Lights Free

Marked Tree, Ark.—By the withdrawal of the $5,000 license derived from the four saloons which are now allowed to run without license, it was thought by many people that all the necessary adjuncts to run an incorporated town would have to be dispensed with here in Marked Tree. and that the streets would be in utter darkness. While it is true, perhaps, that the town is badly crippled in a financial way, yet the street arc lights will continue to shine as heretofore, as the Chapman & Dewey Lumber Company has sent a letter to the City Council offering to give lights free.

Municipal Electric Plant Wrecked

Nelsonville, O.—One of the engines of the municipal electric lighting plant "ran wild" on January 21, following the breaking of an eccentric rod, and massive pieces of machinery were hurled in every direction, badly wrecking the plant and building and killing the night engineer. The spokes of the two-ton flywheel flew out, and all of the machinery connected with the engine was ruined, but a double engine system enabled the plant to resume partial service.

Bond Election Illegal

Trenton, Tenn.—The city of Trenton some months ago bought from Keenan & Wade the electric light plant and issued bonds for the payment of the same. It turns out that the election at which the question of issuing the bonds was voted on was not legally held, and the bonds have therefore been declared invalid. The city had been running the plant for three months and collecting the money for the lights. When the city found that the bonds were illegal and not binding, it tendered back the plant to Keenan & Wade, who refused to accept it, and so the city is in darkness, with no prospect of a settlement of this question at any future time without long and costly litigation.

Electric Lighting Installed in Place of Gas

Plainville, Conn.—The system of street illumination was changed January 15 from Welsbach gas to Mazda electric lights. Ninety lights were installed at a cost of $20 a year to the town, the same price, $1,800, as formerly paid for 67 gas mantle lamps. Lincoln S. Risley, local representative, recently secured a five-year contract for the Housatonic Power Company.

Light Plant Brings Substantial Profit

Tacoma, Wash.—The receipts in the Light Department for 1910 were $455,944, and the expenditures $425,496, leaving a margin of $30,447. The sum of $122,837 was spent for construction work, all of which was taken from the receipts of the plant.

To Have White Way

Centreville, Ia.—This city is to have a "white way" similar to Des Moines and other cities. Large cluster lights will be placed around the square.

New Use for Electric Power

Schenectady, N. Y.—At a meeting of electrical engineers Henry L. Doherty, New York City, made the prediction that the time is not far distant when electricity will be used during the summer months to produce refrigeration in our homes, places of business and elsewhere, just as coal is now burned to keep them warm in winter, surprising his hearers. While the speaker did not go into details of this plan he said that this cooling process would be accomplished by companies operating a small motor-driven refrigerating apparatus, a small ammonia gas compressor and a brine circulating pump.

City Meter Tester Being Installed

Scranton, Pa.—Under the direction of Meter Inspector Fred Ward, a meter testing apparatus is now being installed on the fourth floor of City Hall. The machine, which is now being connected, will be used for ascertaining the accuracy of water meters. Machines for testing gas and electric meters will be installed later. Since the creation of the office of meter inspector there has been no official testing machine. It has been necessary to use the testing machinery of the Scranton Gas & Water Company. In his last annual message Mayor John Von Bergen urged upon Councils the advisability of having an official testing machine for water meters.

FIRE AND POLICE

Gasoline Fire Engine in Commission

Cohoes, N. Y.—Chief Collin states that the reports that the gasoline fire engine stationed at the McCreary Steamer Company's quarters was out of commission was untrue. He says that the engine has been used 15 times since January 5 and is in good condition. The engine has been run every day for the instruction of the men who are to operate it and has not balked once. The Chief stated that the engine will be run every other day for a week or so and then only when necessary, as the men are becoming well versed in the work of running the engine.

Law Book for Policemen

Chicago, Ill.—Leroy T. Steward, Superintendent of Police, has had compiled and published a book for circulation among members of the Chicago Police Department, which explains the points which a policeman should know. The book includes definitions of such words as burglary, arson, kidnapping, etc. Legal procedure, rules of evidence and similar matters are also explained.

Marshal Discusses Arson and Carelessness with Matches

Columbus, O.—State Fire Marshal John W. Zuber in his annual report to Governor Harmon says that as a result of investigations by his force there have been 30 convictions during the year for arson and that 38 cases are pending. During the existence of the department the annual loss from incendiarism had been reduced from $350,000 to $110,000. Regarding fires originating through carelessness with matches, the Fire Marshal says: "During the year 1909 538 fires in Ohio were caused through carelessness with matches, and 182 of such fires were directly traceable to children playing with matches. The total fire loss from such fires was $191,543. We believe the General Assembly should enact a law making it unlawful to sell, give away or have in your possession in the State of Ohio the match known as the friction match. We are also impressed with the increase of accidents caused by thoughtless and careless parents locking their children in their home and leaving them alone, and during the absence of the parent the child plays with fire or matches, fires its clothes and the home, and is incinerated and the home destroyed. We believe the General Assembly should make it a felony for any parent or custodian of children to go away from the home leaving their children alone and locked or shut up in the house."

Inspect Police Alarm System

Mishawaka, Ind.—Mayor John A. Herzog and a party of city officials visited Fort Wayne last week to inspect the alarm system installed there by the Signal Phone Police Alarm Company, of Milwaukee, Wis. All were favorably impressed with the system, and enjoyed the trip and the hospitality of the Fort Wayne city officials. They were met by Mayor Grice and members of the administration and taken about the city in automobiles, looking particularly into the workings of the police alarm system, whereby the patrolmen make hourly reports to headquarters. Among the party from Mishawaka were Mayor John A. Herzog, City Clerk James L. Kennedy, City Engineer James Haverly, Street Commissioner Otto Muinch, Councilmen at Large D. J. Campbell and Frank I. Bickel and Councilmen Nelson Christianson, David Burkhart, Richard Rogeman, Fire Chief Albert J. Buysse and Deputy City Clerk George Raab.

Want Paid Fire Fighters

Wilmington, Del.—A movement is on foot to abolish the volunteer fire department and to present a bill to the present Legislature to authorize a paid department for Wilmington. At least one company has offered to dispose of its buildings and equipment at a nominal figure to the city, and another company has offered to give to the city its buildings and all equipment. The proposed bill provides for eight companies of eight firemen each, to cost for maintenance about $72,000 annually, whereas the present department represents an expenditure to the city of $67,000 a year.

Town Wants Police Call System

Westfield, Mass.—A representative of the New England Telephone & Telegraph Company has conferred with Chairmain Lewis C. Parker, of the Board of Selectmen, and Chief William A. Flouton relative to the installation of a police system. Cost will be estimated on a proposed plan to install five alarm boxes. These boxes are to be connected with the Central Police Station, and every half hour each officer will report. In addition it is suggested that a light be added to each box so that it may be lighted from the police station and attract the attention of the officer on the beat, who will call up and learn what is wanted. But five boxes would be necessary at first and the annual cost would be a small item. In Peabody, where there are 17 boxes, the annual cost is but $450. In order to have the new system work successfully, it will be necessary to have a night man in the station and this will be the greatest item of expense. At present the night arrangement is a hit or miss affair, and there is no way that an officer may be summoned except by telephoning to some one in the business section to go out and look one up.

Would Consolidate Police and Fire Alarm Systems

Milwaukee, Wis.—Consolidation of fire and police alarm systems was recommended by the Mayor in a special communication to the Council last week. The consolidation, he suggests, should be quite complete, but the operators will be left in control of each department, although a general superintendent may be appointed. The Mayor stated that after investigation he found it feasible to consolidate the systems for the sake of economy, and that it could be done without crippling either. The cost of installation, repairs, maintenance and extensions he wants paid by one department and larger cables used. Last year 1,172,682 police calls came in, while the Fire Department received 2,000 alarms over its system.

Leggings for Traffic Squad

New York, N. Y.—The regulations of the Police Department have been amended so as to require traffic squad patrolmen and sergeants to wear leggings with winter uniforms. These are to be of black grained oak tanned leather, puttie pattern, to fasten at the bottom with concealed metal catch and at the top with buckle and strap.

Cause of Some False Alarms Explained

Racine, Wis.—Chief Cape appeared before the Fire and Water Committee and submitted a report on the A. D. T. telegraph system. He proved to the committee that during the past two years seven alarms had been sent in over the A. D. T. and that six of them were false alarms. The Chief said that most of the false alarms were caused by watchmen in factories setting the wrong indicator, not having been properly instructed on how to operate the boxes and he would recommend that the company either see that the watchmen are properly instructed or else have the fire alarms cut out altogether. Mr. Baker, a general agent for the A. D. T. system, was in the city recently, and stated that he would see that the system was put in first-class condition, and that there would be no more trouble with false alarms coming in.

High-Pressure Installation to Reduce Insurance

Spokane, Wash.—Lee McKenzie, Chief Surveyor of Washington of the Fire Underwriters, has submitted to the Board of Public Works in writing his proposition to reduce insurance premiums in the business district 10 per cent, providing the proposed high-pressure fire-fighting water system is put in. Mr. McKenzie made the offer to the Board after going over the plans for the improvement, which is to cost about $150,000. He demands, however, that the high-pressure service be extended to Second avenue, originally left out by Water Engineer Alexander Lindsay's plans. Water Commissioner Armstrong says this will be done. The high-pressure plan involves the laying of 12-inch mains on Main avenue, Sprague avenue and Second avenue, connecting with the high-pressure 30-inch main direct from the pumps on Division street. Cross mains 10 inches in size are to connect the 12-inch mains at every other cross street. Fire Chief Myers says the system will give Spokane the best fire-fighting facilities in the business district of any city in the West. It will make fire engines downtown unnecessary.

Council Votes to Disband Volunteer Department

Jamestown, N. Y.—In response to the vote of the taxpayers of the city the Common Council has voted to disband the local volunteer fire department on March 1 and substitute a paid department of eight companies, with five men each. It is estimated that the cost of maintaining the department for the first year, including salaries and other expenses, will be $40,000. The volunteer department is one of the oldest in Western New York, having been organized on its present basis about 1838. It consists of eight companies, with an average membership of about 30 men. The companies are already equipped with good apparatus and teams.

Police-Woman Makes Good

Los Angeles, Cal.—So helpful has Mrs. Stebbens Wells, Los Angeles' police-woman, been to the Police Department that Chief of Police Sebastian is to ask the City Council for a squad of five additional women for patrol duty. Sebastian declares that Mrs. Wells has been a potent factor in the administration of police affairs since her appointment four months ago. In his opinion, policewomen can do a great deal of good in preventing crime and aiding delinquents to keep out of the meshes of the law. Sebastian will also ask for 100 extra patrolmen.

Fire Chief Reports Work of Department

Elkhart, Ind.—The report of Fire Chief John Ulrich for 1910 shows that the total expenditures for the year were $29,606.61, divided as follows: Salaries, $18,295.33; equipment, $8,500, and miscellaneous expenditures, $2,811.28. The inventory of the different stations shows the value of the Central station house, lot and contents, $35,070.30; Station No. 2, $9,527; No. 3, $8,512.70; No. 4, $8,367.60; total $61,477.60. The total number of gallons of chemicals used was 813 and the number of feet of ladders used, 700. Number of miles traveled by the companies, 534, and number of feet of hose laid, 50,550. The estimated loss on buildings and contents was $303,034 and the insurance collected was $86,971.

GOVERNMENT AND FINANCE

Good Financiering by Commission

Columbia, S. C.—For the first time in years the city of Columbia will have a surplus available for permanent improvements under the income estimated by the City Council for the year 1911. Except for its floating bond issue, the city will be free from debt. According to the calculations, a "reserve fund" of $118,705 can be used for permanent improvements in 1911. When the present City Council took charge of Columbia under the commission form of government, it faced a deficit of approximately $65,000. At the end of 1911 Columbia will be out of debt, having spent a large sum for permanent improvements. The total income of 1911 is estimated at $449,455.

New York Bonds Sold on 4.20 Basis

New York, N. Y.—The sale of $60,000,000 4¼ per cent bonds at an average price of $100,904 was considered very satisfactory by Controller Prendergast. The total number of bids submitted was 568, and the issue was oversubscribed five times. J. P. Morgan & Co.'s bid of all or none at 100.897 barely failed. The largest successful bid was Kuhn, Loeb & Co., who will get $11,000,000. At a sale of $50,000,000 bonds about a year ago the average income yielded at the selling price was 4.14.

Commission Government Elections

Ottawa, Ill.—By a vote of 1,227 to 445 commission government was adopted January 17.

Decatur, Ill.—By a majority of 878 commission government was adopted January 17.

Dixon, Ill.—By a plurality of 159 commission government was adopted January 17. Every precinct but one voted to adopt the plan. The total vote cast was about 60 per cent of the usual municipal vote.

Elgin, Ill.—By a majority of 840 votes commission government was adopted January 21. Two-thirds of the total vote of the city was polled. The change will become effective May 1 and 50 candidates will seek nominations for commissionerships at the primary next month.

Claim Much for Municipal Ownership

Monroe, La.—Friends of municipal ownership who are advocating the re-election of Mayor A. A. Forsythe point to the wonderful growth of the city during the 12 years Mr. Forsythe has served. Twelve years ago there were less than 4,000 inhabitants, and the city was refused credit for a barrel of lime. It owed property valued at less than $20,000, with no utilities or conveniences. After an experience covering a decade under the municipal ownership plan Monroe to-day, paying 10 mills less taxes than other Louisiana cities, owns property valued at more than $750,000, has a population exceeding 10,000, a radium-salt water natorium, 9 miles of electric car lines, electric lighting system, water works, park of 100 acres, gas well, artesian well, public school building, $100,000 City Hall, fire station and jail, traffic bridge across the Ouachita River, 12 miles of sewerage, paved and graveled streets, 80 acres of gravel deposit valued at $25,000 and a city hospital. The people are the owners of all their public service corporations.

City Adopts New Form of Voucher

Corning, N. Y.—A new form of voucher has been adopted at the direction of Mayor Ellison for the use of the city in the future. The feature of the voucher is that the check which is drawn to pay the bill appears on the reverse side of the bill so that the two cannot become separated. By this arrangement in the future both will be on file with the City Chamberlain instead of having the bill on file with the City Clerk, as had been the case heretofore, and the check as returned from the bank on file with the City Chamberlain. The new voucher was designed by Mayor Ellison personally after he had given the subject much attention. Hereafter all bills against the city will have to be presented on a standard form in order to be audited by the Audit Committee.

Meeting Called for Uniform Municipal Government

Lansing, Mich.—M. F. Gray, of the subcommittee appointed from the Citizens' Council and City Committee some time ago, is busy compiling a list of the principal cities of the State and arranging preliminaries for calling a meeting of delegates from such cities for the purpose of getting some measure through the Legislature relative to uniform municipal government. It is proposed to present a measure to the Legislature that will permit cities to embody in city charters the recall and referendum clauses. The matter of commission form of government and those parts of it in which the State has to deal will also be discussed and taken up with the Legislature by committees to be appointed from the delegates attending the gathering. Considerable detail surrounds the work of getting the delegates together and presenting questions to be discussed.

Mayors May Be Recalled

Seattle, Wash.—A special election will be held February 7 for the recall of Mayor Hiram C. Gill.

Tacoma, Wash.—An application has been made to City Clerk W. H. Cushman for recall petition blanks and charges against Mayor A. V. Faucett have been filed by M. B. Stambaugh, former Councilman under the old form of government. The Mayor is charged with building up a personal political machine and other offenses.

Spokane Adopts Commission Rule

Spokane, Wash.—By a majority of 2,237 out of a total of 10,463 votes, the commission plan charter, drawn by a committee of 15 freeholders, has been accepted. The following will be the immediate effects of the new charter:

"Any official filling an elective office may be recalled. Any new ordinance may be introduced by initiative petition and election. Referendum may be applied to any ordinance except emergency ordinances, ordinances ordering local improvements and those ordering the annual tax levy and appropriations. Any provision of the new charter may be amended by petition and election. Succeeding elections of city officials will be under the new commission system, the next general election to be on March 7."

The other powers of the charter—those which directly affect the administration by the commission—will go into effect when the first commission has been elected and has qualified.

Discuss Commission Form of Government

Trenton, N. J.—Mayors and others, delegates from cities in all parts of the State, assembled January 24 to discuss the commission form of government as a means of relief from partisan abuses and other municipal ills. It was Civic Day of Trenton's "Know Your City Week," and the Trenton Chamber of Commerce and Mayor Madden's nonpartisan civics commission were in charge. In the afternoon there was a mass meeting with an address by Commissioner MacVicar, of Des Moines, who has served his city officially under the old and the new form of government. Mr. MacVicar enthusiastically advocated commission rule as carried out in many of the cities of the West. This evening J. Horace MacFarland, president of the American Civics Association, delivered an address on "The City Beautiful."

Lynn City Engineer Makes Report

Lynn, Mass.—Eleven thousand, three hundred and sixty-seven feet of sewer, 17,330 square yards of Hassam paving, 9,202 square yards of granolithic, 6,266 square yards of tar concrete and 18,395 feet of curbstones were laid in this city in 1910, according to the report of City Engineer George I. Leland, which is just issued. The aggregate expenses of the City Engineering Department were $8,806.81. An unexpended balance of $664.36 was transferred by the Committee on Finance to other departments at the close of the fiscal year. The salaries of the assistants to the City Engineer amounted to $5,311.17. His own salary is $2,500.

STREET CLEANING AND REFUSE DISPOSAL

City Wins Garbage Suit

Syracuse, N. Y.—At his second trial on the charge of violating a city ordinance by collecting garbage, George Checksfield, of Onondaga, was convicted by a jury in the Court of Special Session. Justice B. J. Shove suspended a sentence of $50 fine, provided an appeal is not taken. The case against Mr. Checksfield is one of about 15 which the city has started to prevent the practice of farmers gathering garbage from boarding houses, hotels and residences. The prosecutions are the result of complaints of the Syracuse Reduction Company for violation of its contract with the city and the commencement of a suit against the municipality for $20,000 damages. The company claimed that its profits on the contract were partly in the by-products of the reduction plant, and that the most valuable part of the garbage was being taken by the private collectors. The ordinances prohibit the collection of garbage by individuals without a permit. The only authority to grant permits is vested in the Common Council and the Commissioner of Public Safety. It was claimed at the Checksfield trial that he has about 90 hogs to which he feeds the garbage. The same practice is charged against other collectors. It is also claimed that they use the same wagons for drawing garbage and milk which is sold in the city. By living outside the city's jurisdiction, the only method of regulation is by the ordinances prohibiting the collection.

Garbage Problem in Salt Lake City

Salt Lake City, Utah.—Salt Lakers will be forced to pay $12.50 per carload to have their garbage carted out of the city limits by the Salt Lake & Los Angeles Railroad, if a contract measure introduced at the City Council meeting is approved. The document was submitted by the City Health Commissioner, Dr. Samuel G. Paul, and had been prepared at a conference of Councilmen in the Mayor's office. It provides that the city turn all garbage and refuse of any nature over to the railroad at the old city dumping grounds west of the Jordan, on North Temple street. The railroad intends to dump it on a barren tract of land between the city and Saltair. Owing to objections arising over the fact that the contract appears to bind the city to deliver all its garbage, thereby doing away with the need of the city crematory and other present sources of getting rid of it, the matter was referred to the city attorney and the Municipal Laws Committee.

Garbage Collection in Manila

Manila, P. I.—Garbage from houses, markets and shops is deposited in barrels and cleared away by the municipal garbage carts at night to be used, where available, for filling in reclaimed land or burned in the city crematories. On the whole, the natives took kindly to the use of the barrels instead of as formerly throwing their kitchen refuse out into the streets, but the first attempt to introduce metal garbage receptacles of an official pattern was a failure, the material of which the tins were made being so useful for roofing or building purposes that the number of thefts became prohibitive. Experiment is soon to be made with a new type of tin, the material of which will be of a conspicuous and easily identifiable pattern.

RAPID TRANSIT

Subway for Buenos Ayres

Buenos Ayres, Argentine.—After many years of discussion and suggestions by the different authorities in power in the Argentine Republic, permission has just been granted to construct two underground railways within the municipal area of Buenos Ayres, which had become absolutely necessary to relieve the congested traffic conditions in the narrow streets of the city. Platforms at the stations are to be very wide and long, allowing for a train of eight cars to be drawn alongside. The access to the stations is to be by two wide stairs, the entrance and exit being distinct. The depth of the underground railway is to be 22.38 feet from the level of the street, thus necessitating only 30 to 35 steps of the stair to ascend from or descend to the carriages. The tunnel will be made of solid wall of cement and brick, with an arched roof amply high, as the current is to be from above. The way is to be formed of heavy rails to avoid vibration, resting upon sleepers of hardwood, these being laid upon a bed of small stones.

Ask Statute for City Ownership

Des Moines, Iowa.—Mayor Hanna's bill for municipal control of the street car system has been approved by the committee of 25 Polk County delegates in the Legislature and the city legal department, and will be placed on the calendar of the Legislature immediately. The bill provides for the acquiring, leasing and operating of street railway systems by municipalities of over 60,000 population. It legalizes condemnation proceedings and the election of officials to be put in control of the company. Bonds may be issued upon the property without any taxation of general city property or pledging of municipal revenues.

Offer Triborough Bid

New York, N. Y.—The Bradley Contracting Company has written to the Public Service Commission through Frank Bradley, President, offering to build the entire triborough subway route for $85,437,567. The company also offers to equip the route, together with the Fourth avenue line and loop in Brooklyn, at its own expense, and to operate the lines or turn them over to the city on payment of the cost of equipment plus 10 per cent of such cost. The following statements are made in the formal offer:

"We hereby offer to construct the triborough route, for which bids were submitted October 27, 1910, in accordance with the plans, specifications and terms which accompanied said bills, for the sum of $85,437,561, or in accordance with such modifications for the triborough route as you may decide upon at a cost proportionate to the above figure.

"We hereby agree to equip at our own expense the said triborough route, the Fourth avenue route and the Brooklyn loop line route and to operate them all in such manner and upon such terms as you in your judgment shall determine to be reasonable to us and to the city of New York, giving proper security for such equipment and operation."

Chairman Willcox, of the Public Service Commission, commenting on the offer, said: "Mr. Bradley has informed me that his offer is made absolutely in good faith, and that his company is willing to construct the road upon the specifications and conditions prepared by the commission."

After the withdrawal of the McAdoo offer in December it seemed for a time probable that there would be no competition for the Interborough.

Will Build Trolley Lines

Charlotte, N. C.—That the Duke interests contemplate a net-work of interurban trolley lines connecting Charlotte and the cities of Piedmont South Carolina, and utilizing the vast water power developed by the properties of the Southern Power Company, in which they are heavily interested, was made known last week, when Messrs. J. B. and B. N. Duke and W. S. Lee unfolded their plans to business men of Greenville, Anderson and Spartanburg, S. C.

Ten-Car Expresses in Subway

New York, N. Y.—Ten-car express trains were run for the first time in the subway January 23. While the work of extending the platforms to accommodate the extra cars will not be completed for a few weeks yet, the subway management decided to begin running 10-car trains at once. Until the new platforms are finished it will be possible to board or leave the last two cars of a train at a few stations only by passing through the other cars.

Street Cleaning Rendered Ineffective

Portland, Ore.—Superintendent A. Donaldson, of the Street Cleaning and Sprinkling Department, in his annual report describes the process of street cleaning and succeeding events as follows: "The principal streets of the city are cleaned and flushed off every night and present a fine appearance in the early morning, but unfortunately for the credit of the department the streets are never allowed to remain clean until the public can see them. Early each morning paper, rubbish and other dirt is swept into the streets by storekeepers and others, spittoons and other receptacles are washed into the gutters, vegetable venders and others throw refuse into the streets, and soon they look as though they had never been cleaned. All this is in violation of a city ordinance, but it is not enforced by the police, whose duty it is to enforce it."

Wants Enabling Act for Municipal Ownership

Detroit, Mich.—In his inaugural address Mayor William B. Thompson advocated the introduction of a bill into the Legislature to provide for an enabling act in case the people decide for municipal ownership and wish to acquire the street car lines.

MISCELLANEOUS

Teaching Drivers the Law

Beaumont, Tex.—Small pamphlets containing the new traffic ordinance with illustrations how to drive have been freely circulated, and every driver of a vehicle has had an opportunity to get one. Next week there will be a police officer stationed in the middle of intersecting streets in the business section of the city. They will point out to drivers their mistakes and will require obedience to the rules. This will be continued for one week, and the officers will be shifted around to different corners. After that one week of teaching and directing the officers will begin enforcing the law.

Cost of Smokeless City

Minneapolis, Minn.—J. W. Allan, Smoke Inspector, has prepared a statement showing that the elimination of the smoke nuisance in Minneapolis would cost property owners $7,200,000. This amount would have to be invested in new boilers and smoke consuming devices. Allan says there are 26,000 plants in Minneapolis that should be regularly inspected by the Smoke Inspector. But it is a physical impossibility for one man to do the work, Allan says, and he suggests several assistants be appointed.

May Change Location of City Hall

Pittsburg, Pa.—Frederick L. Olmsted, the city planning expert of Boston, Mass., has made a comprehensive report to the Pittsburg Civic Improvement Commission for a City Hall site, beautiful breathing spots and also outlet to the South Hills, across the Monongahela River, in the now unsightly Hardscrabble district. So impressed with the plans are some of the members of the Commission that they believe the new idea should be given long and serious consideration before the erection of the new City Hall on the market site is started.

Municipal Cold Storage Plant

Cleveland, O.—To reduce the cost of living, the city is planning to rent space to individuals in the municipal cold storage plant being installed in the new West Side market house. Individuals, restaurant keepers and grocery keepers will be encouraged to buy butter, eggs, poultry and other farm products direct from the farmer in summer, when the goods are comparatively cheap, and place them in the cold storage plant for winter use. If the plan succeeds in this case, it is the intention of the city to establish cold storage plants in different parts of Cleveland, in which space will be rented to individuals at a rate which will merely cover the cost of operation. Power to operate the plant is to be supplied by the municipal light and power system. It is thought that by this method high prices which prevail in winter can be broken. Farmers will receive better rates for their products, but the people will not be compelled to pay exorbitant prices now asked for food products by those who store goods in summer to sell in winter. It is believed by Public Service Director Lea that other cities will adopt the plan, if it succeeds here. The city owns a large farm in Warrensville, products from which will be stored for use in the Department of Charities.

Plan to Require Autos to Stop at Near Side

Indianapolis, Ind.—Passage of an ordinance requiring automobiles to make brief stops at the near side of particularly dangerous street crossings as a means of preventing acidents probably will be asked of the City Council by the Board of Public Safety. At a recent meeting the board decided it was time something was done to prevent automobile accidents at certain north side street crossings. With Superintendent of Police Hyland, the Board made a trip to several dangerous crossing and decided to place immediately in the center of the street intersections at Sixteenth and Thirtieth streets, in Meridian street, circles of stone curb 4½ feet in diameter. In the center of these circles ornamental iron poles bearing red electric lights will be placed. This will require automobiles to slow down in order to drive around the obstructions.

Wilmington Park Department Annual Report

Wilmington, Del.—The Board of Park Commissioners in their annual report state that although their work has been hampered by lack of funds, the increased use of the parks by the public shows that the improvements that they have been able to make were much appreciated. The annual expenses were $23,520. Acknowledgment is made to the E. J. du Pont de Nemocus Powder Company for the gift of two tracts of land, one of 106 acres the other of 18 acres.

Want Food Supply Inspected

Chattanooga, Tenn.—Licensing of the milk dealers, special places for butchering cattle and several other such reforms in the matter of handling the city's food supply are pointed out by Dr. J. C. Brooks, City Food Inspector, as some of things most needed now in Chattanooga. He says that it is now impossible for him to thoroughly inspect the milk which is sold to the consumers on account of the fact that he has no way of distinguishing the dealers. With the license system in vogue, he would have the list of dealers always at command and could more easily keep watch over them. As to the matter of butchering cattle, Dr. Brooks says that there is no way of telling whether the meat which is sold here comes from a good, healthy animal or from one that has died of some sickness. He says that it is sometimes the case that a man who has a cow die on his hands will butcher it and sell the meat in the city. With a regular slaughter house where an inspector could be always on hand this menace to health would be eliminated.

Street Signs and Posts to Go

Evansville, Ind.—A campaign to clear Main street of the hundreds of useless and ugly posts, poles and signs which are to be seen from Eighth to Water streets may be started shortly by the E. B. A. and the Civic Improvement Society. With the appearances on Main street of the ornamental lights, the many posts are more in evidence than ever before.

Ready to Begin Municipal Bathhouse

Brooklyn, N. Y.—Work is to begin at once on the new municipal bathhouse and pavilion at Coney Island. The contract for its construction at a cost of $176,000 has been signed by the Northeastern Construction Company, of 225 Fifth avenue. The company immediately arranged to start work on the heavy cement foundation for the building. It is the aim of the contractors to have the bathing establishment ready for use early next summer, when thousands of people may daily enjoy a free dip in the surf, regardless of the bathhouse owners, whose monopoly of the ocean front until now has continued unabated for years.

Suggest Municipal Shade Tree Nursery

East Orange, N. J.—A municipal nursery for the rearing of young trees is a novel recommendation contained in the annual report of the East Orange Shade Tree Commission. The difficulty of getting the right kind of trees for planting and the long period required between getting them from the nurseries and setting them out are the reasons for establishing such an institution.

White Way Impossible for Street with Awnings

Forth Worth, Tex.—At a recent meeting of the City Commission Corporation Counsel Slay was instructed to frame an ordinance condemning all permanent awnings along Main and Houston streets. Commissioner Powell, who made the motion to instruct the counsel to take this action, declared that it was useless to construct a Great White Way for these two thoroughfares when awnings on the buildings which line the streets would cut off practically all of the light and mar the beauty of the lights. The motion as adopted provides for a penalty for retaining the permanent awnings along the streets without the permission of the City Commission. Sun shades and awnings that can be raised and lowered will be permitted.

Cities May Operate Coal Mines

Salt Lake City, Utah.—As a result of action taken by the City Council Committee on Municipal Laws at its last regular meeting, it is likely that the resolution introduced by Councilman L. E. Hall several weeks ago authorizing cities to become indebted to the extent of an additional 4 per cent of the value of their taxable property for the purchase and operation of coal lands will be recommended to the State Legislature for enactment into law.

To Abolish Contract Work to Protect Local Labor

Spokane, Wash.—The abolition of all city contract work is urged by Mayor N. S. Pratt as the result of a decision rendered by Superior Judge J. D. Hinkle declaring the city's anti-alien labor ordinance invalid. "Since the anti-alien labor ordinance has been knocked out by the court, the city must find some other way of protecting its resident laborers who have families against the foreign 'floating' element. This means that the city must do its own work in the future, eliminating entirely the contractor and employing its own citizens," said Mayor Pratt. The Mayor believes that the failure of the anti-alien ordinance to hold is the first step toward the sweeping change in the city's policy which he has always more or less persistently urged since he took office—the abolition of all city contract work.

Floor of Concrete Bridge Falls

Youngstown, O.—Part of the concrete flooring of the Spring Common viaduct fell recently and the whole of it will have to be relaid. Several causes are mentioned as contributing to the failure—the concrete was frozen, the sand was loamy, the mixture was 1:2:6, the lay bars were found to be laid on one- foot instead of six-inch centers as required by the specifications.

Pumping Plant Cost $14,998

Orange, N. J.—Henry H. Berg, Chief Engineer of the Orange Pumping Station, has filed his annual report with City Clerk Willet B. Gano. It shows that during 1910 a total of 1,169,141,287 gallons of water and sewage passed through the municipal pumps. Of this quantity there were 950,580,000 gallons of water and 218,561,287 of sewage. The total cost of maintenance was $14,998.03.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Water Courses—Adverse Uses

S. O. & C. Company vs. Ansonia Water Company.—In 1884 defendant water supply company obtained from a manufacturing company, a riparian owner below defendant's dam, by a recorded deed, the right to use and divert the water above the dam in consideration of supplying the factory with water required during the working hours during 220 working days in the year. No water was actually taken from the stream under such arrangement, but water was withheld to supply the manufacturing company's wheel, being held substantially two-thirds of the time for the first 15 years, and the effect of withholding it in reducing the waters of the stream was at times serious and perceptible. Held, that other riparian owners could not now claim that defendant was not entitled to so withhold the water for the use of the manufacturing company in view of defendant's open and continued use of the water for that purpose for so long a period.—Supreme Court of Errors of Connecticut, 78 A. R., 432.

Sidewalk Improvement—Lien on Property

Morris et al. vs. City of Gainesville.—Where there is a substantial compliance with lawful requirements in the construction of sidewalks and street improvements by a municipality, and it is not made to appear that the improvements as made are unsuited to the purposes designed, or that such improvements are of no practical value, a lien under the statute on the adjacent property for such improvements may be enforced for the real value thereof under a lawful contract.—Supreme Court of Florida, 53 S. R., 739.

Street Openings—Damages

In re East 172d Street in City of New York.—In proceedings by a city for the opening of a street the damages should have been fixed as of the date when the first street bounding the block was actually opened for public use and not as of the date when the title to such street vested in the city.—Supreme Court of New York, 126 N. Y. S., 284.

Obstructing Street—Rights of Owner

Ogden et al. vs. City of New York et al.—A city constructed docks for use by others for compensation. The contractor doing the work excavated a street so that an abutting owner lost for two years all access to his property and was thereby deprived of its use for that period. A large part of his land fell into the excavation. Held, that the damages inflicted on the abutting owner resulting from depriving him of the use of the street and from his land falling into the excavation were direct and not consequential, and he could recover substantial damages.—Supreme Court of New York, 126 N. Y. S., 189.

Special Legislation—Free Schools

Turner et al. vs. City of Hattiesburg.—Constitution 1890 requiring provision to be made by general laws to prevent the abuse by municipal corporations of the powers of taxation and contracting debts is not self-executing, but requires legislation to put it into effect; and the Legislature may say what is an abuse of such powers by a municipal corporation and provide checks thereon, and it does not invalidate laws 1910, creating the Mississippi Normal College and authorizing municipalities to make donations to secure the location thereof.—Supreme Court of Mississippi, 53 S. R., 682.

Paving Assessment—Bill to Enforce

City of Fairmont vs. Bishop.—A bill by a city, brought under Code 1906, to enforce the lien of a special street paving tax, assessed under section 34 of said chapter, upon the lots abutting on the paved street, is demurrable if it does not allege, in effect, that the owners of the greater amount of the frontage of lots abutting on such street and lying between the same cross streets nearest together, or lying between a cross street and alley, within the same city block, with the lots against which the lien is asserted, signed a written petition asking that the street be paved.—Supreme Court of Appeals of West Virginia, 69 S. E. R., 802.

Water Supply Contract—Cancellation

City of Columbus, Appellant, vs. Mercantile Trust & Deposit Company, of Baltimore, Trustees, and the Columbus Water Works Company and W. S. Greene, as Receiver thereof.—The continuing character of a water works company's contract obligation to furnish an adequate supply of wholesome water is not met by showing that such a supply has been furnished at times, or that, at the time of completion of the works, the company was able to carry out its contract, nor is non-performance excused by the occurrence of conditions which are likely to happen in a climate of long, dry summers. The acceptance by a municipality and its people of improved conditions in a water works system, resulting from complaints, does not estop the municipality to rescind the contract with the water works company for a breach of its contract obligation to furnish an adequate supply of wholesome water, unless such improved conditions result in the continuous maintenance thereafter of such a supply. The maxim that "he who seeks equity must do equity" does not justify a court in denying to a municipality rescission under its cross bill of a contract with a water works company which the latter has broken by failing to maintain a continuous and adequate supply of wholesome water, and in affirmatively restraining the municipality from establishing its own system unless it shall do equity to the bondholders of the water works company by purchasing the usable parts of the water works system. A municipality has the right to treat a contract with a water works company as terminated by the latter's breach of its contract obligation to furnish a continuous adequate supply of wholesome water and to invoke the aid of a court of equity to enforce its rescission, since the remedy at law by an action for damage is wholly inadequate.—United States Supreme Court, 31 S. C. R., 105.

City Attorney's Fees

City of Carterville vs. Cardwell.—Revised Statute 1909, Section 9339, found in the charter of fourth class cities, provides that, if defendant plead or be found guilty, the Mayor or police judge shall assess the punishment prescribed by ordinance, and render judgment accordingly and for costs of suit. Section 9312, after providing that the Mayor shall have power to remit fines or forfeitures, declares that "this section shall not be so construed as to authorize the Mayor to remit any costs which may be accrued to any officer of said city by reason of any prosecution under the laws or ordinances of such city." Section 9324 provides: "That the Aldermen shall have power to fix the compensation of all officers and employees of the city by ordinance." Held, that an ordinance allowing a fee to the city attorney on appeal from the police court to the circuit court was within the power granted and valid.—Springfield Court of Appeals, 132 S. W. R., 745.

Contracts—Power of Particular Officer

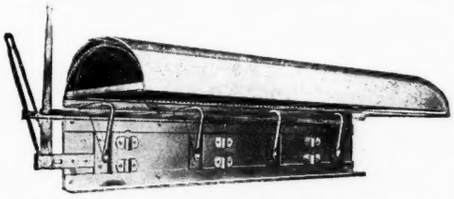
Graff vs. City of Tacoma et al.—Tacoma City charter provides that, subject to the control of the city council, etc., the commissioner shall have charge of and superintend the public works, etc., but shall make no purchases in excess of $500, except upon written contract, and after advertising for bids. Section 130 provides that he shall have special charge and control, subject to the municipal council and ordinances of the city, etc., of the streets, roads and bridges and of improvements and repair thereof, etc. Section 160, which is part of article 12 of the charter, relating to the improvement of streets and kindred improvements, to be made at the expense of the property benefited, provides that the commissioner shall compare bids with the record made by the clerk and award the contract to the lowest legal bidder, etc. Plaintiff in this case made a bid to construct a bridge, which was accepted by the commissioner. Later by ordinance another bid was accepted and the bridge constructed by that contractor. Held, that under the several provisions of the city charter set out above the commissioner could not, by accepting a bid for the construction of the bridge, preclude an award of the contract therefor to another bidder by the city council, because Section 160 refers particularly to street improvements, etc., and the others specifically place the matter under the control of the city council.—Supreme Court of Washington, 112 P. R., 251.

MUNICIPAL APPLIANCES

Collapsible Steel Forms

The collapsible steel forms hitherto made by the Collapsible Steel Form Company, Detroit and Carson City, Mich., will hereafter be manufactured by the Concrete Form and Engine Company, Detroit, Mich., who have also taken over the business of the New Belle Isle Motor Company. The new company will make collapsible steel forms, concrete machinery and general utility engines.

The forms are constructed in three pieces, the top (which is semi-curcular) and two side-plates. The top and one



COLLAPSIBLE FORMS FOR SEWERS, CULVERTS AND BRIDGES

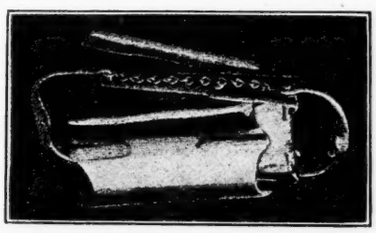
side-plate are shown in the illustration. The working parts of the form are simple and easy to operate. The top, setting between the two side-plates, is held in position by arms attached to the side-plates by bolts, which allow them to be lowered by pulling the draw rods which are attached to the arms. By pulling the draw-rods the arms are lowered and the support of the top is removed, allowing the top to be lowered. The side-plates are held in position by swinging braces so that when locked the sides are immovable. End plates are made which fasten on the top and side-plates by keys so that they may be easily removed. By the use of two side-plates and extra standard size tops it is possible to construct any size culvert ordinarily used.

Sanitary Street Sweeper

The Winters Manufacturing Company, 819 Spring street, Coffeyville, Kan., manufactures a horse-drawn sweeper in which the rotary brush is so completely closed in by canvas that very little dust escapes from it. As a result, it is claimed that a street may be swept in the daytime without creating a nuisance. The first illustration gives an idea of the rear construction, showing the brush, also the skeleton steel frame that carries the rear hood. The brush is side-curtained, preventing the dust from leaving the end of the broom. The view also shows the gear drive, which is connected direct with the broom shaft. The construction is simple and there is nothing to give trouble in operating the sweeper. The second illustration shows the dust receptacle lifted, delivering dirt to the pavement. The dust box is strongly reinforced with angle-iron. The box will hold the dirt from about ten blocks of street.

Sewer Cleaning Machine

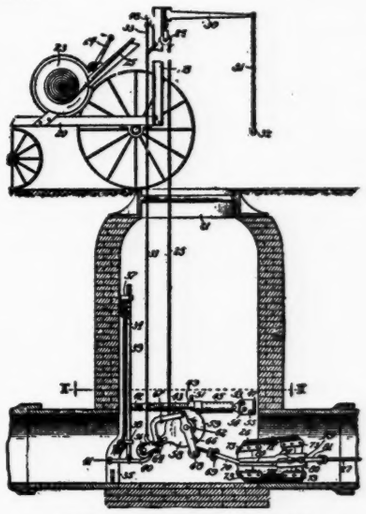
The Kuhlman sewer cleaning machine, manufactured by the Northern Manufacturing Company, Hammond, Ind., differs from other sewer cleaning machines in that the scoop which does the cleaning is pulled directly against the clogged portion of the sewer. When the scoop is filled, doors provided in the front part of the scoop close and it, with the load, is pulled back easily through the cleaned section and drawn up through the manhole and dumped into a wagon by means of a windlass and cable. This work is accomplished without the necessity of sending men down the manhole. A pulley over which the bucket cable passes is attached at the bottom of the



SCOOP OF SEWER CLEANING MACHINE

manhole. This guides the bucket, making the draft direct during the operation of the scoop. When the scoop has been loaded and drawn back to the manhole, a line operated from the surface of the street releases the cable and trolley so that the scoop can be raised.

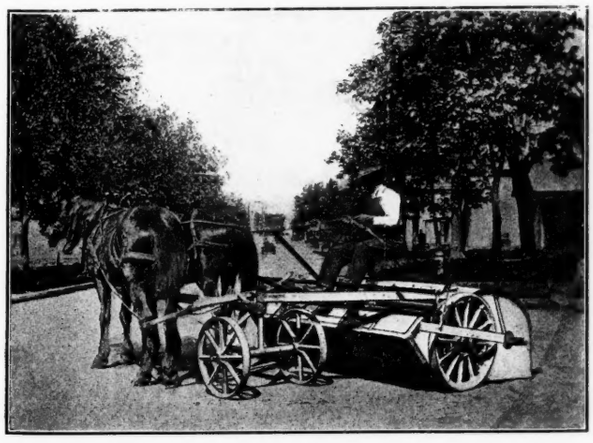
A light line with a float is first passed from one manhole to another. A windlass and cable is stationed at each manhole. A cable is attached to the line and drawn from one manhole to the other. The scoop or bucket is then attached and pulled by the cable against the clogged section of the sewer. A lighter cable from the second manhole pulls the bucket with its load back and elevates it through that manhole.



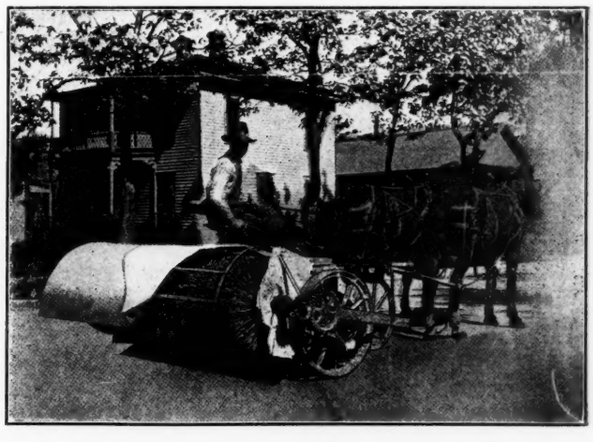
SEWER CLEANING MACHINE

The complete outfit consists of five expansion buckets, one low and one high windlass, two cables and a trolley with pulleys to guide the cables. The trolley system is anchored in the manhole through which the bucket is to be elevated, and keeps the cable from cutting the sewer. After the cable is passed from one manhole to the other the men do all the work from the street. They need not wear rubber boots and oilcloth clothes, hence they can work freely. The bucket allows water to run out so that only comparatively dry sand and mud is drawn out. The company uses a 12-inch bucket for a 16-inch sewer, a 15-inch bucket for an 18-inch sewer, and so on, the bucket being not much less in diameter than the sewer.

Illustrating the efficiency of the machine, the manufacturers state that in operating the machine in Hammond on one occasion the bucket brought out a roll of fine roots. The next pull brought out a root 38 feet long ranging from 5 to 12 inches in diameter. At another time they cleaned a 4-foot sewer in Hammond which had been giving trouble ever since it was built. Complaint of the flooding of cellars during storms had been frequent, although the sewer was large enough theoretically to carry off the rainfall.



WINTERS SANITARY STREET SWEEPER—EMPTYING DUST BIN

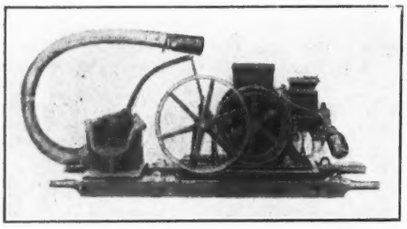


WINTERS SANITARY STREET SWEEPER—REAR VIEW

However, for 12 years no effort was made to clean it except by flushing. In fact, a large centrifugal pump was installed at the mouth of the sewer and operated at every rain with a view to accelerating the flow and removing the sand with which the sewer appeared to be half-filled. Finally the proposition was turned over to the Northern Manufacturing Company to solve. The Kuhlman machine developed the fact that during the construction the contractor had dammed the sewer at intervals with brick walls regularly constructed with mortar joints. These he had never removed. Sand had settled in and filled the sewer to the height of the dams. The Kuhlman machine removed both dams and sand. The sewer, which it was thought would have to be replaced by a larger one, is now doing its work satisfactorily.

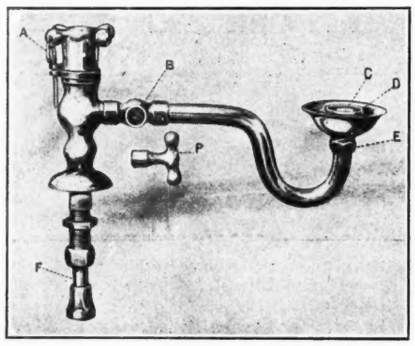
The Douglas Contractors' Diaphragm Pump.

W. & B. DOUGLAS, Middletown, Conn., has designed a self-contained pumping outfit for the use of contractors. It is also used by public service corporations for drainage and sewage work and where pumps of large capacity are operated by unskilled labor. The special



CONTRACTORS' DIAPHRAGM PUMP

feature of the pump is its ability to move large quantities of gritty water at a low price, and to make the unit easily movable from place to place it is mounted on a frame that can be easily handled by four men. The pump is of the diaphragm type and is driven by a gasoline engine. Its capacity is 3000 gallons per hour and it is said to operate on a gallon of fuel per day. All the parts of the engine are inclosed, and the gasoline tank, water jacket, carbureter, muffler, batteries, spark coil and switch are all grouped around the engine. The weight of the pump and engine when crated for shipment is 650 pounds.



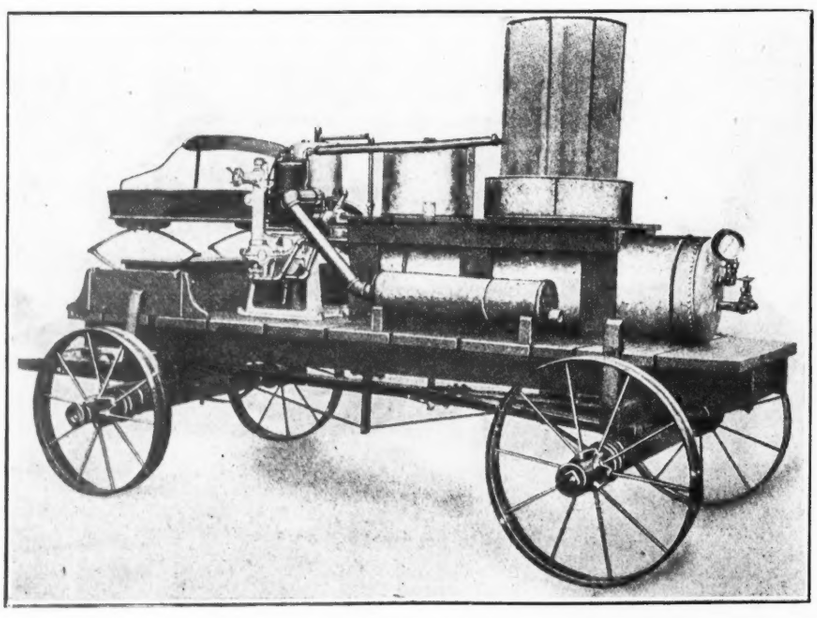
UNIVERSAL SANITARY DRINKING FOUNTAIN

Sanitary Drinking Fountain.

THE Universal Drinking Fountain, shown in the illustration, is made by J. L. Hammett Co., 250 Devonshire street, Boston, Mass. The faucet is ordinarily closed by a spring, except when held open by the hand. By inserting the pin A, however, it is converted into a continuously flowing fountain. The height of the stream is regulated by turning the valve B with a wrench. Drinking water is supplied through the hole C. In the sides of this nozzle are four holes through which the water is forced against the inside of the ring D. Alternating with these four holes are four more holes in the lower edge of the ring D, through which the water is forced against the inside walls of the cup. All the inside parts of the cup are thus being continually flushed. The direction of the stream of water may be changed by turning the regulator E.

Sheet Packing for High Temperatures and Pressures

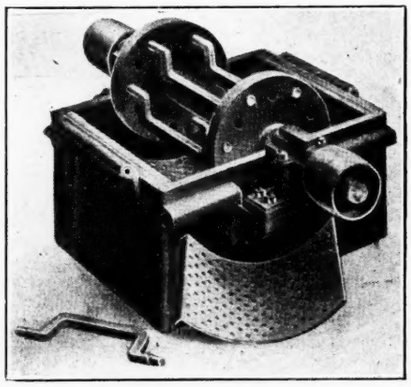
J-M. Permanite is the trade name of the sheet packing made by the H. W. Johns-Manville Co. for use in connection with superheated steam and high pressures. Permanite packing is made of asbestos and rubber. Hence it will stand a temperature that would destroy ordinary packings.



PORTABLE AIR COMPRESSOR WITH GAS ENGINE

Fine Crusher

The Gardner Crusher Distintegrator and Pulverizer is a suitable machine for obtaining fine crushed rock when needed, as in the construction of bituminous concrete pavements, or for other purposes. It is claimed to give a maximum yield with the lowest possible power and maintenance expense. For example, the No. 1 machine, which weighs 1,700 pounds and has a speed of 1,000 revolutions per minute, requires from 7 to 12 horse-power and will crush 3 tons per hour with 20 per cent of product passing a 20-mesh screen and 50 per cent of it through the 100-mesh screen. The wear is confined to only a single piece of the machine, the hammers, which can be changed without loss of time. The crusher requires no special foundations. The machine is



GARDNER CRUSHER AND PULVERIZER

made by the Gardner Crusher Company, 556 West Thirty-fourth street, New York, N. Y.

Portable Air Compressor

A portable air compressor suitable for contractors' use is made by the Roberts Motor Company, Sandusky, Ohio. The machine illustrated was originally made for contractors laying water pipe. The compressor is capable of supplying two ordinary calking hammers. The heavy galvanized steel tank has a capacity of eight cubic feet and can be filled with air at 100 pounds pressure within three minutes from the time the motor is started. A piece of burlap is wrapped around the radiator and kept wet to absorb the heat. The gasoline tank has a capacity of six gallons, sufficient for a run of ten hours. The truck has an open platform with trussed sills. The weight of the outfit is 1,540 pounds.

The special features of the compressor are a gear-driven mechanical oiler, which starts and stops simultaneously with the operation of the motor, a rigid timer which it is said will not get loose, and a noiseless carbureter. The following table gives the principal dimensions and specifications of the compressor:

Diameter of engine cylinder, inches	4½
Length of engine stroke, inches	5
Speed, revolutions per minute	600
Horse-power	6
Area low pressure cylinder, square inches	17.54
Area high pressure cylinder, square inches	6.21
Length of stroke, inches	5
Air consumption, cubic feet per minute	30
Length, inches	27½
Width, inches	19
Height, inches	34½
Weight with iron base, pounds	400
Weight with aluminum base, pounds	350

NEWS OF THE SOCIETIES

New Jersey Association of County Engineers.—The association met in the office of State Road Commissioner Frederick Gilkyson, January 24, and elected the following officers: President, W. E. King, of Morris county; vice-president, E. D. Rightmire, Atlantic; secretary, Assistant State Supervisor of Roads Edward E. Reed, Mercer, and treasurer, Joshua Doughty, Jr., of Somerset. Retiring President Frank J. Epperle expressed regret that the courts in upholding patents for certain paving processes had left to engineers the choice of specifying the high-priced patented materials, laying inferior pavements or infringing patented processes. He hoped that an understanding could be reached with the owners of patents for a uniform specification, under which the various materials could compete. The papers read by the members of the association were as follows: E. D. Rightmire, "Meadow Roads"; Earl Thomson, "Some Notes on Mattressing"; J. J. Albertson, "Penetration vs. Mixing Method"; James Owen, "Why I Have Changed My Mind"; William C. Cattell, "Comparison of the Mixing Methods"; Grant Davis, "Extras on Roads"; William E. King, "Repairs"; Joshua Doughty, Jr., "Width of Roads"; Jacob L. Bauer, "Railroad Grade Crossings"; Frank J. Hubbard, "Reinforced Concrete Bridges."

Maine Society of Civil Engineers.—The society was organized in the rooms of the State Highway Commission, Augusta, with a strong list of charter members, on January 17. The meeting was called by Cyrus C. Babb, engineer of the State Water Storage Commission, who had sent out letters of invitation for the purpose. A temporary organization was effected by the election of Mr. Babb as chairman and Frank Pressey, of Bangor, secretary. The association effected its permanent organization with the election of the following officers: President, Cyrus C. Babb, Augusta; vice-president, Walter H. Sawyer, Lewiston; secretary, Frank E. Pressey, Bangor; treasurer, H. S. Boardman, Orono; directors, Paul D. Sargent, of Michias; E. C. Jordan, of Portland; P. H. Coombs, of Bangor; E. E. Greenwood, of Skowhegan; Moses Burpee, of Houlton; executive committee, the officers and directors.

Stephenson County Good Roads Association.—The annual meeting was held in Freeport, Ill., on January 14, and opened with an address of welcome by President Jacob Weiss, of the Citizens' Commercial Association of Freeport. President Brickner, of the association, called attention to the need of such a body in every county in the State. Part of a letter from Moses Levering, a retiring commissioner, read: "I am tired of the business. The first year I worked hard for better roads and got nothing but rebuffs, the roads were good enough for them. You know we have no money to work with. Our town has about $1,300 to work 51 miles of road and 51 bridges, say nothing about culverts. We set aside one-half for bridges, that leaves us $12.75 per mile for road work and $12.75 per bridge, and then they wonder why we do not have better roads and bridges. I wish your road society would explain it so they can see why they do not have better roads." Election of officers will be held on the third Saturday in April.

Ohio State Stone Club.—At the meeting at Toledo January 10 among the papers presented were the following: Present Highway Laws of Ohio and Proposed New Laws, by State Highway Commissioner J. C. Wonders; Roads, Yesterday, To-day and To-morrow, by H. F. Earl, formerly State Highway Commissioner of Michigan; County Roads in 1920, by J. W. Weldon.

Kansas State Good Roads Convention.—One of the main points urged at the good roads meeting at Wichita on January 17 was that the Kansas constitution should be revised so it will be possible to get State aid for road improvements in the townships and counties. Governor Stubbs' place as speaker was taken by H. J. Waters, head of the Kansas Agricultural College. About five hundred delegates had registered. The creation of an official or board of control, either in State or county, with power arbitrarily to locate more extensive road improvements and the need of a State road engineer were discussed.

Carolina Municipal Association.—The annual convention of the association was held on January 18 and 19 in the rooms of the Chamber of Commerce, Raleigh, N. C. On account of slow arrival of the members, no forenoon session was held. The Mayors present failed to endorse the Battle bill, which is a general measure designed to permit cities of over 5,000 inhabitants to adopt the commission form of government if the voters may so decide. There were many grounds of objection to the bill, and these were urged by those who in many cases favor such government. It was urged that the needs of various cities were different and that separate provision must necessarily be made for each, just as various forms of charters are now found necessary. Among other subjects discussed were the division of the road fund, by which towns and cities might get some returns in work on their streets for their payment toward the support of public highways. "Municipal Taxation" was the subject of a paper by Mayor J. D. McNeill, of Fayetteville, who protested against the discriminatory provision of the laws which prohibit cities from taxing telephone, telegraph and express companies doing business within their limits. The old officers were unanimously re-elected, as follows: President, Fred. N. Tate, High Point; first vice-president, James D. McNeill, Fayetteville; second vice-president, T. W. Hawkins, Charlotte; third vice-president, O. B. Eaton, Winston; fourth vice-president, J. S. Wynne, Raleigh; fifth vice-president, W. D. LaRoque, Jr., Kinston; sixth vice-president, W. G. McRae, Wilmington; secretary and treasurer, Thomas D. Meares, Wilmington.

Indiana Gas Association.—At the convention of the association, which ended at Fort Wayne on January 19, the following officers were elected: President, S. E. Mulholland, Fort Wayne; vice-president, Howard Olds, Newcastle; secretary-treasurer, Philmer Eves, Indianapolis; directors for three years, Samuel T. Murdock, Lafayette; James Moncrie, Bloomington. The growth of the association is the most notable fact brought out in the convention. It now has 150 members. The tenor of the principal addresses has been the question of rates and the relations of gas companies to the public.

Colorado Goods Roads Conference.—More than three hundred delegates attended the conference in Denver, beginning January 13, to devise a plan for the betterment of the highways of the State. Among the speakers were Dr. F. L. Bartlett, president of the Denver Chamber of Commerce, whose topic was "The Commercial Club and Its Relation to Good Roads." C. P. Allen, chairman of the Colorado State Highway Commission, followed Dr. Bartlett, discoursing at some length on what the Commission had accomplished since its organization. L. C. Paddock, of Boulder, spoke on "How to Finance Road Building," and State Engineer C. W. Comstock, on the "Internal Revenue Fund." "What State Highways Will Do for Colorado" was the subject of Isaac N. Stevens, of Pueblo. He stated that the good roads in the small country of Switzerland were paying an annual income through the tourist traffic of over $100,000,000 a year to the hotels alone, and that it is possible that the total income in Switzerland on account of good roads is $250,000,000 annually. He stated that Paris is receiving $800,000,000 annually on account of the splendid good roads of France. Mr. Stevens stated that if Colorado had roads equal to those in the Alps or the Pyrenees or the roads of Norway the State would have an annual income of $250,000,000 greater than it now has. He stated that it was time to quiet the discussion of the matter of a few thousand dollars to be expended in roads and to begin a discussion of a matter of millions. He called attention to the fact that California has just voted $18,000,000 for good roads, $9,000,000 of which is to be used in constructing a splendid State road north and south, to be used as an automobile road.

Michigan Engineers' Society.—The session ended at Lansing on January 12, with the election of the following officers: President, Byron E. Parks, Grand Rapids; vice-president, J. R. Allen, Ann Arbor; secretary, A. L. Holmes, Grand Rapids; treasurer, Dorr Skeels, Grand Rapids; directors, Herman K. Vedder, East Lansing; Frank F. Rogers, Lansing, and John J. Hubbell, Manistee. Where the next convention will be held has not yet been decided, the matter being left in the hands of the directors. Because of its central location, it is probable that Lansing will again be selected. One of the principal speakers at the meeting was F. F. Rogers, the State Road Commissioner, who spoke at some length on preserving macadam roads by means of different tar preparations, and in that connection said that the college road could have been kept in far better condition if the center of the road had been covered with one-half inch of coarse sand. This layer of sand would protect it from the auto traffic. He also stated that while some roads were injured by autos traveling over them, that was the case with a very small number. A discussion followed this talk, in which it was brought out that the life of all macadam roads could be prolonged by the use of tar preparations as a binder, different preparations being used for different kinds of material. And contrary to what some have supposed, the harder the stone the better the road. During the last year there have been 790 miles of road built, for which State awards have been paid to the amount of 22 per cent of the total cost of the roads.

Wisconsin Electrical Association.—At the convention of the association, held at the Hotel Pfister, Milwaukee, January 19, C. M. Axford, of Chicago, strongly urged the adoption of a better system of street lighting in many American cities because of its value for police protection. He also referred to the value of electric lighting as an advertising medium. Other speakers were: A. D. Goedjen, Milwaukee, on "Electric Meter Testing"; John I. Beggs, of the Milwaukee Electric Railway & Light Company; C. N. Duffy, the Milwaukee Electric Railway & Light Company, who spoke on "Insurance," and W. J. Kelsh, master mechanic and chief engineer of the Eastern Wisconsin Railway and Light Company and the Wisconsin Electric Railway Company, who told of the work in an "Electric Railway Repair Shop." The following officers were elected: G. B. Wheeler, Eau Claire, president; Irving P. Lord, Waupaca, first vice president; W. H. Winslow, Superior, second vice-president; R. M. Kimball, Kenosha, third vice-president; George Allison, Milwaukee, secretary and treasurer.

PERSONALS

BRACKETT, WINSLOW M., Newark, N. J., formerly Superintendent for the Barber Asphalt Co., Trenton, N. J., has been appointed sales agent for the State of New Jersey for the Texas Company.

BREWER, ALEXANDER, former Mayor of Ogden, Utah, has been chosen President of the Weber Club, a civic organization.

BURRELL, FRANK E., Quincy, Mass., has been appointed Chief of Police, and Randolph Bainbridge will be Commissioner of Public Works.

CANON, W. H., was re-elected Mayor of Medford, Ore.

CASSELL, R. L., Morristown, Tenn., has been appointed Chief of Police.

DROWNE, HENRY B., has given up his position as Assistant Engineer in the Rhode Island State Board of Public Roads, and accepted a position as Assistant Engineer with Arthur H. Blanchard, Consulting Highway Engineer, Providence.

EDWARDS, WILLIAM H., New York's Commissioner of Street Cleaning, is one of twenty-six who recently received medals from the Carnegie Hero Fund Commission. This award is made in connection with the shooting of Mayor Gaynor last summer, when Edwards disarmed the assailant.

FROST, HARRY D., for three years connected with the Detroit Water Company, has been engaged by the Akron (Ohio) Waterworks Company.

FULLERTON, T. M., Gadsden, Ala., has been chosen Chief of the Fire Department.

GETZ, ALEXANDER, former Mayor of Hamilton, O., is dead.

GOODRICH, W. FRANCIS, London, England, Consulting Engineer on Refuse Disposal, is making a trip of inspection to a number of American cities having incinerating or other refuse disposal plants.

GRAY, HARVEY, has been appointed Chief of Police for Pasco, Wash., and Alf. Buchanan, of Portland, Ore., Street Commissioner.

HALL, C. T., Malden Mass., has been reappointed Street and Water Commissioner; Henry W. Estay, City Engineer; T. J. Foley, Acting Chief of Police, and T. W. Hough, Fire Commissioner.

HILL, WILBUR, has resigned the position of City Engineer for Gadsden, Ala., and it is expected that H. P. Ford, the Assistant Engineer, will take his place.

HUDSON, WILLIAM, has been re-elected Borough Engineer by the Doylestown, Pa., Council.

INGALLS, FRED, is the new Chief of Police at Centralia, Wash.

JERVAIS, WILLIAM J., has been appointed by Mayor James a member of the Buffalo Board of Health.

JONES, FRED A., Houston, Tex., has been engaged by city of Patterson, La., as Engineer in charge of construction of $30,000 water works.

KELLER, DR. ARTHUR, Paris, Ky., has been made Health Officer.

MAUPIN, S. T., becomes Superintendent of the water plant at Knoxville, Tenn., succeeding E. N. Chisholm, Jr., who recently resigned.

MEAD, GILES W., Mayor of Glen Ridge, N. J., has been elected President of the joint councils of Bloomfield and Glen Ridge, succeeding William P. Sutphen, resigned.

MILLSPAUGH, W. E., Port Jervis, N. Y., has been elected Chief of the Fire Police.

MORLEY, ALFRED J., is entering upon his third term as Mayor of Victoria, B. C.

MOTT, FRANK K., Mayor of Oakland, has married Mrs. Gertrude Bennett, of Berkeley, Cal.

MUNGLE, WILLIAM, Newark, N. J., has been elected President of the Board of Street and Water Commissioners.

NEWBLOCK, NEWMAN F., has been appointed Chief of Police, Tulsa, Okla., to fill vacancy caused by the resignation of Charles W. Connelly.

PERRY, L. E., Philadelphia, Pa., until recently connected with the design and construction of the Pennypack Creek sewage disposal works of the city of Philadelphia, Pa., has been appointed Secretary and Engineer of Houston, Perry & Co., Seaford, Del.

RAWLS, H. C., the new Mayor of Columbia, Miss., is only twenty-five years of age.

ROURKE, LOUIS, Boston, Mass., has been approved by the Civil Service Commission as Commissioner of the Department of Public Works. Before taking up his work in Boston he was for seven years engaged on the Panama Canal.

SARGENT, PAUL D., has resigned as State Highway Commissioner of Maine to accept the position of Assistant Director of the United States Office of Public Roads.

SKIRM, BENJ. C., Trenton, N. J., has resigned from the Board of Water Commissioners.

STEWART, SAMUEL M., Rochester, N. Y., founder of the firm of A. F. & S. C. Stewart Co., manufacturers of fire apparatus, died January 7.

TAYLOR, L. B., a native of Michigan, has been re-elected Mayor of Vancouver, B. C. He is a naturalized British subject.

THORNBURG, JOHN A., has been elected Mayor of Forest Grove, Ore.

VEDVINE, REMY, has been named for Mayor of the newly organized municipality of Oakdale, La.

WALCOTT, E. L., Chicago, Ill., formerly Secretary of the Modern Iron Works, Quincy, Ill., has been appointed Manager of the Pacific Flush Tank Co., succeeding the late Sidney W. Miller.

WARREN, FRED T., Tampa, Fla., is the new City Engineer.

WEBER, FRANK S., for seven years City Clerk of Watertown, Wis., will leave early in February for three months in the South for his health.

WIDMER, JOHN, Lackawanna, N. Y., has been re-elected President of the Council. John J. Monahan was reappointed City Clerk and Maxwell Briggs given another term as Commissioner of Public Works.

TRADE NOTES

Cast Iron Pipe, Chicago.—It is estimated that the lettings thus far this year are just about equal to the total for the same period of last year. Quotations: 4-inch, $25; 6 to 12-inch, $24; 16-inch and up, $23.50. Birmingham: The aggregate of small orders placed within the week is quite satisfactory Prices are believed to be on a firm basis and an advance at an early date probable. Quotations: 4 to 6-inch, $20 to $20.50; 8 to 12-inch, $19.50 to $20; over 12-inch, average $18. New York: A number of good orders from private companies have been placed in the last week. Quotations: 6-inch, car loads, $22.

Lead.—The demand is light, but market is said to be firmer. Quotations: New York, 4.50c; St. Louis, 4.35c.

New Paving.—City Engineer Frank Newton and Councilman George Miller, Carthage, Mo., are said to have invented a pavement which it is expected will be laid in Carthage. The ingredients are said to be Carthage limestone and cement. The cost, it is expected, will not much exceed $1.

Chicago Cement Show.—The outlook for the success of the fourth annual cement show in Chicago, February 16-23, is very bright. The show will again be held in the big Coliseum. A new and very beautiful scheme of ceiling and wall decorations has been designed and the next cement show will undoubtedly surpass in beauty any that have thus far been held. The same general equipment for booths will be installed as was used at the New York cement show in December last. The corner posts and railings will all be made of cement and the show will be truly a cement show. There will be about two hundred exhibitors. Inquiries from all parts of the United States, particularly from the territory in the Middle West, indicate that the out-of-town attendance will be very heavy. The show comes just at the right time for the contractors who are in the market for machinery for the opening building season. Two important conventions will be held in connection with the Chicago Show. The annual meeting of the National Builders' Supply Association will be held at the Auditorium, February 21-22, and the Sixth Annual Convention of the Interstate Cement Tile Manufacturers' Association will be held at the New Southern Hotel, February 21-23.

Turbo-Generators.—The City Council's Water Committee and the Commissioner of Public Works, Buffalo, N. Y., have approved the purchase by the city of three steam-turbo-electric generators for the equipment of the new water works from the Westinghouse Machine Company, the lowest bidder, at $248,180. In addition to providing power for pumping service, the new generators will supply current for lighting the streets and public buildings, for which Niagara power is now used.

Corrugated Culverts. — The Ohio Corrugated Culvert Company, Middletown, Ohio, announces the increase of its capital stock from $65,000 to $100,000. The capacity of its plant will be greatly increased, and one of the new proposed buildings will be used for manufacturing portable houses made from American ingot iron, rolled by the American Rolling Mill Company, Middletown.

Fire Extinguishers.—The General Fire Extinguisher Company will enlarge its plant at Warren, Ohio, by the erection of a brick and steel factory building, 150 by 350 feet, the contract for which has been placed with the Woods Construction Company, Detroit, Mich. A portion of the building will be used for pipe storage purposes and the remainder for a machine shop. An electric crane will be installed as well as other machinery.

Wood Preserving Plant.—A new and what is regarded by many as an important development in the industrial growth of the Pittsburg district is the formation of the Pittsburg Wood Preserving Company, Pittsburg, which has taken measures for the erection of a timber-treating plant between Pittsburg and Connellsville, on a site recently secured for the purpose. The president and general manager is Grant B. Shipley, who designed the largest tie, pile and pole preserving plants in the country. Contracts insuring the success of the enterprise have been made with railroad companies, but the plant will be operated as a general commercial proposition on orders from steam or electric railroads, telegraph and telephone companies, mining companies, municipal boards or companies controlling docks, harbor improvements, etc. With the rapidly increasing use of treated timber, to preserve it from decay, there will be room in the United States for many such plants, and their equipment of machinery is very considerable. It includes enormous steel pressure cylinders, pressure pumps, vacuum pumps, general service pumps, air compressors, boilers, feed pumps, heaters, engine or other prime mover, electric generator, motors, storage tanks, hoists, yard locomotives, special cars, equalizing reservoirs, underground discharge reservoirs, piping, steam receivers, traps, separators and a mass of auxiliary apparatus such as is commonly used with the above.

Creosoting Plant.—The creosoting plant of the International Creosoting Construction Company, at Beaumont, Tex. was burned January 12. The loss is estimated at $80,000. The insurance is reported to be ample. The head office of the company is at Galveston.

Voting Machines.—B. A. Myers, Goshen, Ind., is erecting a factory at Middlebury, Ind., for the manufacture of a voting machine. Later on it is the intention of Mr. Myers to establish a factory in either Michigan or Wisconsin. Additional equipment will be purchased later.

Steam Shovels.—The Bucyrus Vulcan Steam Shovel Company, Evansville, Ind., has elected the following officers: President, H. P. Eels, Cleveland, Ohio; vice-president, G. F. Steedman, St. Louis, Mo.; secretary-treasurer, C. L. Schweigart, Milwaukee, Wis.

Crushers.—Plans are reported to be in progress for a further extensive addition to the works of the Power & Mining Machinery Company, Cudahy, Wis., which is now operated as a branch of the International Steam Pump Company.

Somers System of Assessment.—A meeting of the Allied Civic Bodies, Erie, Pa., unanimously recommended that Council appropriate $12,000 to make a systematic equalization of municipal tax valuations in accordance with the Somers system adopted in Cleveland, O.

Municipal Automobiles.—The large number of automobiles owned by some of the various municipalities is surprising; thus the city of New York owns and operates no less than 130 cars. When the present administration came in there were 119 automobiles, which had cost an average of $2,328 apiece, or $277,000 total. Eighteen more have been bought for $34,000, an average of $1,900 apiece, while some seven old machines have been sold for $14,229, a very high average for second-hand cars of $2,033. There are 16 or 17 departments having machines used solely by them, while other departments divide the use of the cars. Of the departments having more than one car for their exclusive use, the water supply with 16, the health with 11, fire with 9 and charities with 7 lead. Wages and repairs vary widely, thus the water department's 16 cars cost $17,368.68 in the six months of 1909, from January 1 to June 30. During this same period the health department's 11 cars cost $9,856 and the fire department's 9 $17,106.89. The first averages $1,085.54 per car, the second $896 and the third $1,900.76. It thus costs the fire department twice as much per car as it does the health department.

Paving Brick.—A new industry may be started in Binghamton, if, as is expected, some of the State roads in the vicinity will be built with brick. A paving brick plant may be built at East End, Moeller Hill. Most of the property on the hill which contains deposits of material suitable for the manufacture of paving brick, belongs to Charles P. Stevens, Colonel George W. Dunn and a former resident of this city named Stone. The old plant of the Ogden Brick Company, abandoned for a number of years, could be utilized for the new industry.

Lighting Standards.—The Elmer P. Morris Company, Elizabeth, N. J., and the Frederick Iron Works, Frederick, Md., were consolidated January 21 under the name of the Morris Iron Company, which is capitalized at $175,000. Operations will hereafter be carried on at the Frederick foundry, and work will be commenced at once on an addition there comprising 61,000 feet of floor space. John Mitchell, Jr., is president; E. P. Morris, vice-president and general manager; C. C. Biser, treasurer, and W. T. S. Diven, superintendent.

Road Oiling Machine.—The Good Roads Machinery Company, Kennett Square, Pa., has the road oiling machinery and business of the G. F. W. Company, Saratoga Springs, N. Y. This machinery will hereafter be manufactured at Groton, N. Y., and will be marketed by the Good Roads Machinery Company, through its various branch offices and selling agencies. The machine called the Perfection Oil and Asphalt Distributor handles either light oil or heavy oil that requires heating. The fuel cost per day for heating is claimed not to exceed one dollar.

Asphalt Plant Burned.—The plant of the Barber Asphalt Company, Portland, Ore., was burned January 10. The fire started in a bank of asphalt. The damage is estimated at $20,000. Officers of the company state that the plant can be rebuilt in time so as not to delay the paving work in the spring.

Meter Boxes.—Manufacturers and dealers in Detroit will figure on the equipment of a new plant for the H. W. Clark Company at Mattoon, Ill., for the manufacture of various appliances used in water distributing systems, including meter boxes. Brass-working tools are among the requirements.

Contractor Fails.—The Elmore and Hamilton Construction Company of Albany, which has construction work under way on the Catskill Water Supply, near Ardsley, Westchester County, and Gardiner, Ulster County, has gone into the hands of receivers, with liabilities of $270,271 and nominal assets of $496,206. Judge Holt in the United States Circuit Court appointed the Albany Trust Company and James M. Hamilton receivers, with a bond of $35,000, on the application of Louis Mizell, a creditor for $1,224, and authorized them to continue the business for not more than four months without further order of the court. A petition in bankruptcy was subsequently filed here against the company by these creditors: Finger & Lewis, Schenectady, $636; Frederick W. Schaefer, $70, and R. U. Detvill Walsh, $50, both of Albany. Amos Van Etten, of Kingston, was appointed special master. The principal items in the assets are: Plant, $260,482; quarries, $29,071; steel forms, $43,791, and due from the City of New York, $84,469. Of the liabilities $70,000 is due to the Albany Trust Company and $11,614 is due on payroll. The most valuable assets of the company are two contracts with the City of New York on the Catskill aqueduct, one for $1,485,000 and the other for $933,000. About $587,000 work has been done on the two contracts. The city has retained about $57,000 until the completion of the work. It is said that one of the causes of the trouble is the company's large investment in plant and quarries, which used up the working capital. The work is now closed down for the Winter. The company was incorporated on December 9, 1907 with capital stock og $250,000.

Buys Lighting Franchise.—It has been announced that the Long Acre Electric Light and Power Company, New York, N. Y., whose plan for starting an opposition to the New York Edison Company has been before the public for several years and which involved it, four or five years ago, in a controversy with the Public Service Commission with regard to the issue of securities, has been bought by a syndicate of New England capitalists identified with electric interests. At a recent meeting of the company, James F. Shaw of Massachusetts was elected President. He declined to state what individuals formed the syndicate or the price that had been paid for the concern. He said, however, that the company intended to proceed immediately with the development of electric light and power under its franchise and that it contemplates the expenditure of at least $10,000,000 on its initial plant.

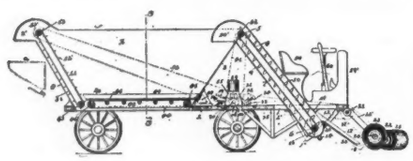
Trinidad Asphalt.—The quantity of asphalt taken from Pitch Lake, Trinidad, B. W. I., which covers an area of 100 acres, during 1910 exceeded that of any previous year. At the present rate of operation, the surface level is lowered about 6 inches a year. The depth of the deposit of asphalt over the center of the lake is unknown, as it cannot be sounded by rods, but the supply is supposed to equal the demand for many years; possibly it is inexhaustible.

Fire Protection for Wagon Works.—Work has started on a large reservoir at the Studebaker Bros. Manufacturing Company works at South Bend, Ind. The tank, which will have a capacity of 150,000 gallons, will be at the top of a steel tower 206 feet in height.

PATENT CLAIMS

981,652. STREET-CLEANING MACHINE. John B. d'Homergue, Pittsburg, Pa. Serial No. 489,208.

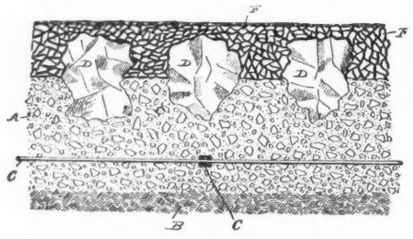
In a street cleaning machine, the combination of a vehicle having a body thereon, means for gathering the material from the street, a power-driven inclined conveyor



for delivering the material to said body, and power-driven means within said body for moving the delivered material along said body.

982,247. CONCRETE ROADWAY. Edward M. Chadbourne, San Francisco, Cal. Serial No. 572,728.

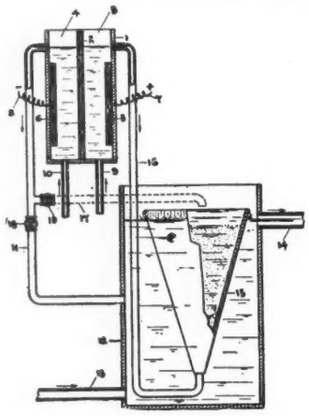
The method of pavement construction which consists in laying a foundation substantially impervious to heavy oils and with oil retaining receptacles on its upper face; in spreading thereon a heated cementitious binder in liquid condition and which is



substantially non-fluid at normal temperatures, and in applying and pressing into the layer of cementitious binder a layer of heated screenings whereby the screenings are forced down and the binder rendered limpid and displaced upwardly to fill the voids in and bond the screenings together.

982,704. METHOD OF PURIFYING WATER. William B. Bull, Chicago, Ill., assignor to Chloride Process Company, Chicago, Ill., a Corporation of Illinois. Serial No. 564,245.

The method of purifying water, which consists in producing by electrolysis a solution which is a solvent of iron, subjecting iron in a separate chamber to the action of such solution to form a solution



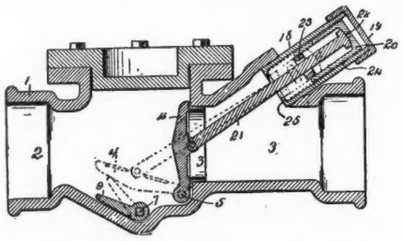
of an iron compound, precipitating the iron solution in the form of an hydroxid coagulant, and coagulating the impurities in the water to be purified with such coagulant.

982,705. APPARATUS FOR PURIFYING WATER. William B. Bull, Chicago, Ill., assignor to Chloride Process Company, Chicago, Ill., a Corporation of Illinois. Serial No. 565,314.

An apparatus for purifying water, comprising electrolytic means, including a chemically inert anode, for producing a reagent adapted to act upon a suitable metal to form a soluble salt thereof capable of being precipitated to form a coagulant, a container separate from the anode chamber adapted to contain such metal, a receptacle for the water to be treated, and means for conducting the reagent to the metal and for introducing the unagglomerated coagulant produced therefrom into the water receptacle.

982,400. AUTOMATIC VALVE. Thomas H. Walker, Kansas City, Mo. Serial No. 448,548.

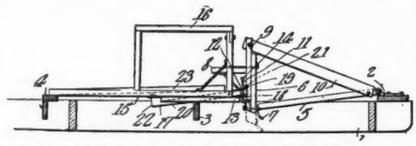
The combination with a valve casing having an inlet and an outlet for fluid, of a valve movable in said casing by incoming fluid to close said outlet when the fluid has reached a certain predetermined pressure, a cylinder closed at its outer end and



having its inner end communicating with said outlet, a hollow piston reciprocative in said cylinder and having openings one at each end for the passage of fluid, a bypass being provided for the passage of fluid in said cylinder past said piston, and a rod connected to said valve and adapted to engage and force outwardly said piston when the valve in closing has moved to a certain position.

982,309. ROAD SCRAPER AND GRADER. George K. Smith and Ralph Russell, Albany, and John Anderson, Jr., and Howard Grimes, Newcomb, N. Y. Serial No. 592,107.

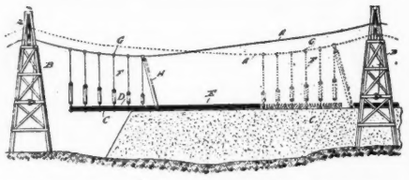
In a machine of the character described. the combination with a traveling frame, of



longitudinally movable beams carried thereby, scrapers supported by said beams and having pivotal connection with the frame and means for moving said beams longitudinally in reverse directions to adjust the angularity of said scrapers.

981,649. CABLEWAY. William Hewitt, Trenton, N. J., assignor to The Trenton Iron Company, Trenton, N. J., a Corporation of New Jersey. Serial No. 560,579.

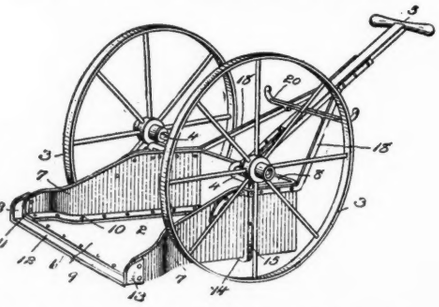
An apparatus of the character described,



including in combination cables, a cradle supported thereby and adjustable along said cables and means for effecting a vertical adjustment of one end of a span relatively to the other.

981,883. STREET-CLEANING PAN. William Henry Rolfe and Charles Henderson Baker, Wabash, Ind. Serial No. 538,327.

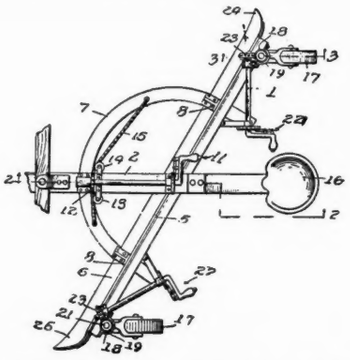
A device of the character described comprising a pan having a flaring mouth, an axle upon which the bottom of said pan rests, the said axle being bent upwardly to



conform to the sides and depth of the pan, the said axle being bent inwardly over the sides of the pan and then outwardly, wheels on said axle, the hub of said wheels extending over the sides of the pan in such manner that the distance between the two wheels is less than the width of the mouth of the pan.

982,427. ROAD-GRADER. David P. Henninger, Redondo Beach, Cal. Serial No. 575,398.

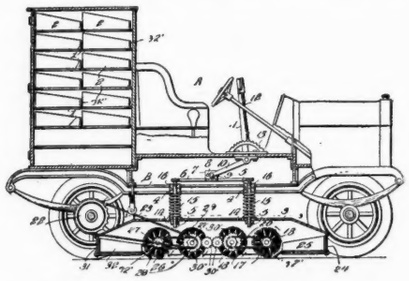
In a dirt road grader, a cross bar, a tongue pivotally connected at its rear end to the center of the cross bar; a semicircular tongue brace connected at its ends to the cross bar and slidingly connected to



the tongue; a chain connected at its ends to the tongue brace, said ends being upon opposite sides of the tongue; a controller shaft mounted upon the tongue; a sprocket wheel fixed upon the controller shaft and engaging the chain and a controller mechanism for operating the controller shaft; so that by manipulating the controller mechanism the angle of the cross bar relative to the tongue may be adjusted.

982,570. STREET-SWEEPER. Carmen C. Brooks, Haxtum, Col. Serial No. 570,447.

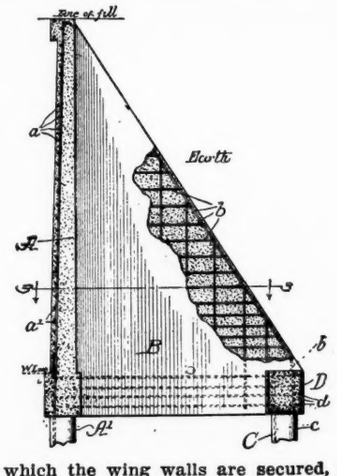
In a street sweeper, a vehicle, a yieldingly supported casing movably mounted between the front and rear axles of the vehicle, pans removably supported by the casing at the ends thereof, a plurality of



pairs of brushes revolubly supported by the casing, driving mechanism for the brushes, the said driving mechanism including means for revolving the respective pairs of brushes in opposite directions and in the direction of the pans at the ends of the casing, and means for moving the casing vertically beneath the vehicle.

982,698. RETAINING WALL.—Maxwell M. Upson, New York, N. Y., assignor to Raymond Concrete Pile Company, New York, N. Y., a Corporation of New Jersey. Serial No. 583,124.

A retaining wall comprising a vertical wall, wing walls connected therewith, piles



to which the wing walls are secured, and means associated with said wing walls for resisting the tendency of the vertical wall to overturn or travel horizontally.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio	Cleveland	Feb. 3	Grade, drain, curb and pave several streets	Ira O. Hoffman, Secy. Pub. Serv.
Indiana	Indianapolis	Feb. 3	Grading and curbing street	C. A. Schrader, Pres. B l. Pub. Wks.
Oklahoma	Sapulpa	Feb. 4	Constr. approx. 16,000 sq. yd. asphalt pavement	I. J. Anderson, City Clerk.
Ohio	Youngstown	Feb. 6	Impr. 4,040 ft. of road with slag macad.	Frank Agnew, Sec'y R l. Comrs.
Indiana	Greensburg	Feb. 6	Macadamizing Main street	Frank E. Ryan, County Auditor.
California	Fresno	Feb. 6	Constr. grade, curb. culverts and sidwk. approach	W. H. Ryan, City Clerk.
Minnesota	St. Paul	Feb. 6, 10 a.m.	Furn. steam or gasoline road roller, 10 or 12 ton	Geo. J. Ries, County Auditor.
Indiana	Fowler	Feb. 6, 1 p.m.	Construct stone road	Lemuel Shipman, County Auditor.
Ohio	Youngstown	Feb. 6, 1:30 p.m.	Improving road with slag macadam for 1,040 feet	Frank Agnew, Secy. Road Comrs,
Indiana	Huntington	Feb. 6, 2 p.m.	Constr. gravel rd. known as P W. Forest Road	John W Weaver, Co. Aud.
West Virginia	Huntington	Feb. 6, 1 p.m.	Grad. and pave. 20 streets with vit. brick, bitulithic, sheet asphalt, asphalt block or concretic asphalt	John Coon, Comr. of Streets.
Georgia	Atlanta	Feb. 6, 3 p.m.	Lay brick, tile and cem. sidew. and furn, mat. for rep. to sts.	W. J. Campbell, City Clerk.
Indiana	Tipton	Feb. 6	Constr. gravel road in several townships	J. H. Tranbarger, County Auditor.
Alabama	Montgomery	Feb. 6, noon	Paving with brick, asphalt, bitulithic, Blome granitoid block, mineral rubber, wood block, Hassam granite block or Hassam comp. concr. pave, with necessary grad. curb. and sew.	C. J. Fay, Acting Treasurer.
Indiana	Indianapolis	Feb. 6	Sprinkling unimp. sts. from May 1 to Oct. 15	Board of Pub. Works.
New York	Buffalo	Feb. 6	Paving and re-paving streets	F. G. Ward, Comr. Pub. Wks.
Louisiana	Crowley	Feb. 7, 8 p.m.	Construct. approx. 150,000 sq. yd. sidewalk	R. J. Boudreaux, City Clerk.
Indiana	Michigan City	Feb. 7, 10 a.m.	Constr. cement and brick sidewalk for 1911	E. J. Heise, City Clerk.
Indiana	Brazil	Feb. 7, 11:30 a.m.	Improving various highways in Clay County	E. A. Staggs, Auditor.
Kansas	Manhattan	Feb. 7, 6 p.m.	Pave. with brick block, wood block, concr., asph. concr., or sheet asphalt, requiring approx, 12,200 yds., pave. and 4,000 cu. yd. excav. on Poyntz. ave., and 16,200 yds. pave. and 5,450 cu. yd. excav. on Houston and Fourth sts.	C. T. Gist, City Clerk.
Florida	Palatka	Feb. 7, 7:30 p.m.	Constructing approx. 16,500 sq. yd. concrete sidewalks	A. T. Triay City Clerk.
Canada	Vancouver, B. C.	Feb. 7	Furnish road roller, weight not less than 15 tons	Wm. McQueen, City Clerk.
Florida	Tampa	Feb. 7	Paving with shell 1½ mile road	Hillsboro County Commissioners.
Indiana	Crawfordsville	Feb 7, 2 p.m.	Constr. gravel road known as L. T Rush Road	B B Engle. County Auditor.
Indiana	Logansport	Feb. 7, 10 a.m.	Constr. gravel road in Tipton and Jefferson twps.	J. E. Wallace, County Auditor.
Indiana	Winamac	Feb. 7, noon.	Grading, drain. and gravel. certain highways	W. E. Munchenburg, Co. Aud.
Indiana	Martinsville	Feb. 7	Constr. road in Adams township	J. S. Whitaker, County Auditor.
Indiana	Marion	Feb. 7, 2 p.m.	Constr. macadam road in Fairmont township	A. Y. Stout, County Auditor.
Virginia	Elizabeth City	Feb. 7, 3 p.m.	Constructing smooth or brick pavement	City Clerk.
Wisconsin	Waterville	Feb. 7	Constructing 8-mile macadam road	County Commissioners.
Indiana	Michigan City	Feb. 7	Constr. cement and brick sidewalk for 1911	E. J. Heise, City Clerk.
California	Riverside	Feb. 8	Macadamizing 1¾ miles road	A. B. Pilch, County Clerk.
Ohio	Cleveland	Feb. 8, 11 a.m.	Grading drain. and improve. Fairmont road	John T. Goldenbogen, Clk. Co. Comrs.
Indiana	Mt. Vernon	Feb. 8, 2 p.m.	Constructing 2 mile road in Robb township	Paul Maier, County Auditor.
Indiana	Lafayette	Feb. 8, 10 a.m.	Construct gravel road	Geo. W. Baxter, County Auditor.
Indiana	Evansville	Feb. 9, 10 a.m.	Broken rock and gravel to repair roads	C. P. Beard, Clk. B l. of Turnp. Dir.
Pennsylvania	Erie	Feb. 13, 8 p.m.	Paving part of W. 20th street	F. Hanlon, City Clerk.
Michigan	Menominee	Feb. 14, 2 p.m.	Constr. gravel road on bay shore	Carl A. Anderson, Clerk.
Ohio	Cleveland	Feb. 15	Constr. Broad View road	J. T. Goldenbogen, Clk. Co. Comrs.
Alabama	Mobile	Feb. 16, noon.	Lay 33,000 sq. yd. wood block pave. incl. grade and concr. foundation, with 13,426 ft. cement curb	Board of Pub. Works.
West Virginia	Huntington	Feb. 20, 1 p.m.	Paving two alleys	John Coon, Comr. of Streets.
Ohio	Defiance	Feb. 20	Stoning 1½ mile road, approximate cost $5,000	County Auditor
Massachusetts	Boston	Feb. 20, 1 p.m.	Constr. roads, walks, drains, etc. at Ft. Andrews	Capt. A. M. Miller, Constr. Q.M.
Oregon	Portland	Feb. 23	Constructing pavement on Jersey st	J. W. Morris, City Engineer.
Oregon	St. Johns	Feb. 23	Constructing several hard service streets	A. M. Esson, City Representative.
Manitoba	Winnipeg	March 1, 11 a.m.	Supply 1,000 to 1,500 tons asphalt for paving	M. Peterson, Secy. Bd. of Control.
Georgia	Savannah	March 9, noon	Furn. 5,000 cu. yd. cem. gravel or like material for imp. pub. rds.	County Commissioners.
SEWERAGE				
Missouri	St. Louis	Feb. 3, noon.	Constr. Baden pub. sewer	Maxime Reber, Pres. B. P. Imp.
Minnesota	Warren	Feb. 4, 10 a.m.	Furn. about 2,200 ft. corrugated culverts	County Auditor.
California	Nelson	Feb. 5, noon.	Construct sewers and septic tanks for Richvale	Secy. Richvale Land Co.
Georgia	Atlanta	Feb. 6, 3 p.m.	Constr. sewers and furn. vit. pipe, cem. and castings	W. J. Campbell, City Clerk.
Oklahoma	Muskogee	Feb. 6, 5 p.m.	Constr. sanitary sewers	Chas. Wheeler, Jr., City Clerk.
Kansas	Lawrence	Feb. 6	Constructing 8-in. lateral sewer	F. D. Brooks, City Clerk.
Ontario, Can.	Toronto	Feb. 7, noon.	Constructing low level intercepting sewer	G. R. Geary, Mayor.
Georgia	Augusta	Feb. 7	Excavating 3rd level of canal	Wm. L. Martin, City Clerk.
Montana	Billings	Feb. 7	Construct sewer	J. D. Matheson, City Clerk.
New Jersey	Summit	Feb. 7, 8:30 p.m.	Constr. 4,960 ft. 8 and 10-in. vit. pipe sewer	J. E. Howe, City Clerk.
North Dakota	Dickinson	Feb. 7, 10 a.m.	Furn. metal culverts, 45 to 48-in. diam. 20 ft. length	F. L. Hughes. County Auditor.
New York	Yorkville	Feb. 9, 4 p.m.	Constructing sewers, including disposal plant	W. Armstrong, Clerk.
Minnesota	Minneapolis	Feb 10, 7:30 p.m.	Furn. sewer brick, spl. castings and vitri. clay pipe	Henry N. Knott, City Clerk.
Alabama	Uniontown	Feb. 13, 8:15 p.m.	Constr. sewerage system and disp. plant, incl. 1,840 lin. ft. 15-in., 3,000 ft. 12-in., 7,500 ft. 10-in , 15,200 ft. 8-in. pipe sewer	D. P. Coleman, Mayor.
North Carolina	Wilson	Feb. 15, noon.	Constr. from one to two thous. ft. 30 to 49 in. brick storm sewer	T. A. Hinnant, Clerk.
Alabama	Mobile	Feb. 16, noon.	Constr, approx. 10,350 lin. ft. storm sewer ranging in size from 5x11 ft canal to 10 in. vit. pipe; also 6,000 ft. 6 in. vit. pipe hose connect	Board of Pub. Works.
West Virginia	Huntington	Feb. 20, 1 p.m.	Laying sewers in various streets	John Coon, Comr. of Streets.
New York	Hastings-on-Hud	Feb. 24	Construct sewers in various streets. About 16,000 feet	Jos. E. Murphy, Clerk Bd. Trust.
WATER SUPPLY				
Ohio	Troy	Feb. 4	Constr. water mains to infirmary	A. E. Sinks, County Auditor.
Illinois	Kingston	Feb. 4	Consr. water works system, consisting of 3,000 ft. of 4-in. pipe, 8-in. well, tank and gasoline engine	Sylvester Witter, Village Clerk.
California	Nelson	Feb. 5, noon.	Install water system for Richvale	Secy. Richvale Land Co.
Iowa	Rippey	Feb. 6, 8 p.m.	Construction of water works system	J. A. Haberer, Town Clerk.
Manitoba, Can.	Winnipeg	Feb. 6	Erect. two pump. plants; cap. 1,000,000 imperial gal. per 24 hrs.	M. Peterson, Secy. B l. Control.
Kansas	Hanover	Feb. 6	Constructing pumping station	Dugald Spence City Clerk.
Georgia	Kirkwood	Feb. 6	Furn. mat. and machy. for constr. water and sewerage system	Hazelhurst & Anderson Atlanta.

BIDS ASKED FOR

State	City	Received Until	Nature of Work	Address Inquiries to
			WATER SUPPLY (Continued)	
Minnesota	Madison Lake	Feb. 6	Drill 8-in. well, approx. 200 to 300 feet	F. B. Knoff, Village Clerk.
South Dakota	Huron	Feb. 6	Impr. w. w. system, includ. brick pump house, pump. plant, reinf. concr. reserv. 750,000 gal. cap.,steel tower 100 ft. high, and tank 200,000 gal. cap.	S. S. Oviatt, City Auditor.
Missouri	Kansas City	Feb. 9, 2 p.m.	Constr. and deliver two meters of Venturi type, with attach. for install. one on 48 and one on 36-in. pipe	E. B. Harrington, Secy. Bd. F. and W. Comrs.
Minnesota	Minneapolis	Feb. 10, 7:30 p.m.	Furn. for use in 1911 c.i. pipe, hydrants, valves and special castings, and two 30-in. meter tubes for measuring water pumped by two 20,000,000 gal. centrif. pumps	Henry N. Knott, City Clerk.
New Jersey	South River	Feb. 13	Constr. suction well, brick and concr, 25 ft. diam. and 33 ft, deep	Chas. Anderson Boro. Clerk.
Montana	Townsend	Feb. 14	Constr. water supply system	E. H. Goodman. Town Clerk.
Ohio	Toledo	Feb. 14, noon	Constr. extension water purif. wks. incl. 14 filters, etc., capable purifying 14,000,000 gals. daily	J. R. Cowell, Dir. Pub. Serv.
Georgia	Dalton	Feb. 16	Constr. water works incl. concr. reservoir, 2,000,000 gals. capacity, approximate cost, $30,000	Paul B. Trammell, Mayor.
Montana	Bozeman	Feb. 16, 5 p.m.	Excavating for reser. and laying concr. approx. 4,846 sq. yds.	A. M. Brandenburg, City Clerk.
Nebraska	North Bend	Feb. 17, 8 p.m.	Install pumping sta. includ. wells pipes, engines, etc	Frank D. Howe, City Clerk.
Washington	Colville	Feb. 21	Constructing 3,200 ft. of 10 in. wood pipe	City Clerk.
Ohio	Wooster	Feb. 31, noon	Constr. addition to waterworks system	S. L. Smith, Dir. Pub. Serv.
Wyoming	Sheridan	Mar. 6, 3 p.m.	Constr. water supply main with approx. 7,934 ft. of 14-in. and 760 ft. of 10 in. c. i. pipe	Arnold Tschirgi. City Engr.
Pennsylvania	West Telford	April 1	Constr. water works; approx. cost $30,000	H. Z. Walpole, Secy. Water Co.
			BRIDGES	
Ohio	Cincinnati	Feb. 3, noon	Building culverts on Kirby road	Fred Driehs, County Clerk.
Minnesota	Warren	Feb. 4, 10 a.m.	Building culverts of various sizes	County Auditor
Mississippi	Iuka	Feb. 5	Constr. bridge over McNutt Mill Creek	J. F. Oaks.
Kansas	Chanute	Feb. 6, noon	Constr. bridge across Neosho river. also three smaller bridges	W. F. Sams, City Clerk.
Ohio	Zanesville	Feb. 6, noon	Constr. substructure of Fifth st. bridge	H. A. Buerhaus, County Auditor.
Minnesota	Minneapolis	Feb. 6, 11 a.m.	Repair Bridge No. 4, Hanover Village	A. P. Erickson County Auditor.
Ohio	Williamsport	Feb. 6	Repairs to bridge, and superstructure for bridge	County Aud., Circleville.
Mississippi	Meridian	Feb. 6, 2 p.m.	Constr. wooden bridge	W. R. Pistole, County Clerk.
Mississippi	Vicksburg	Feb. 6	Construct. steel bridge over bayou	J. D. Laughlin, Chancery Clerk.
Indiana	Columbus	Feb. 6	Constr. bridge in Rock Creek township	P. J. Sater, County Auditor.
Mississippi	Port Gibson	Feb. 7	Repairing bridge, approx. cost $4,000	A. K. Brashear, Clk. Bd. of Supv
Indiana	Elkhart	Feb. 7, 9:30 a.m.	Construct bridge	D. O. Bachelor, County Auditor.
Georgia	Augusta	Feb. 7, 4 p.m.	Constr. masonry culvert over Beaver Dam Ditch	Wm. L. Martin, City Clerk.
Louisiana	Houma	Feb. 7, 2 p.m.	Constr. bridge across Bayou Terrebonne, total length 132 ft. 50 ft. span	J. C. Dupont.
Indiana	Indianapolis	Feb. 8, 10 a.m.	Constr. bridge over Lick Creek	Albert Sahm, County Auditor.
New Jersey	Salem	Feb. 8, 10:30 a.m.	Constr. concrete floor bridge	Levi S. Prickett, Chm. Bd. Com.
Washington	Spokane	Feb. 9, 2 p.m.	Constr. concr. bridge over Latah Creek	J. C. Argall, Secy. Bd. Pub. Wks.
South Dakota	Yankton	Feb. 27, 7:30 p.m.	Constr. steel reinforced concr. bridge over Rhine creek	John W. Summers, County Auditor
Ohio	Springfield	Feb. 28	Constr. 120 ft. bridge over Mad river	County Commissioners.
			LIGHTING AND POWER	
New Jersey	Newark	Feb. 3, 3 p.m.	Furn. and install. ash conveying and auto. stoking system for boiler room of power house	L. E. Voorhees, Chm. P. B. Com.
Washington	Tacoma	Feb. 6	Com. remain. prt. Nisqually power plant. tot. cost. $1,094,000	Nicholas Lawson, Comr. L. & W.
Pennsylvania	Washington	Feb. 20, 7:30 p.m.	Light borough for five and ten years, commencing May 1	John Griffiths, Secretary.
Iowa	Atlantic	March 1	Imp. Elec. Lt. and Power Plant, probable cost $40,000	E. T. Nichols, City Clerk.
Mexico	Monterey, N. L.	March 1	Erection of gas plant	Lewis Lukes, Apartado 58.
			FIRE EQUIPMENT	
Georgia	Ft. Screven	Feb. 6, 11:45 a.m.	Constr. incl. plumb, wiring and fixture one fire station	Constr. Q.M., U.S.A.
Florida	Jacksonville	Feb. 6, 3 p.m.	Constr. bldg. for use fire dept.	W. M. Boatwick, Jr., Chm. W.W. Bd
Texas	Sherman	Feb. 6	Furn. 1,500 ft. rub. lined cotton hose, 2½ in.	B. C. Kreager.
New York	Mt. Vernon	Feb. 7	Construct fire house	City Clerk.
Illinois	Carlinville	Feb. 7	Install lighting plant in almshouse	W. C. Seehausen, County Clerk.
New Jersey	Kearney	Feb. 8, 9 a.m.	Furn. 2,000 ft. of 2½ in fire hose, fifty ft. lengths	Wm. B. Ross, Town Clerk.
Massachusetts	New Bedford	Feb. 8, 7:15 p.m.	Furn. 5,000 ft. of cotton rubber lined hose and 12 steel lockers	Edw. F. Dahill, Chief Fire Dept.
Washington	Seattle	Feb. 10	Furn. 2,000 ft. of 3½ in. and 3,000 ft. of 3 in. rubber lined cot h	H. W. Carroll, City Clerk.
Washington	Spokane	Feb. 10, 2 p.m.	Furn. 25 fire alarm boxes	John Gifford, City Purchas. Agt.
Dist. of Col'bia	Washington	Feb. 15, 2 p.m.	Furn. one gasoline motor driven fire eng. and hose wagon comb	Commissioners of the Dist. of Col.
Montana	Bozeman	March 2, 5 p.m.	Furn. 80 to 90 h.p. A. L. A.M. rating auto, chem. gasoline wagon with speed of 45 mi., including 1,200 ft. of 2½ hose, 40-gal. chemical, tank, etc	A. M. Brandenburg, City Clerk.
New Jersey	Princeton	July 5	Furn. auto pumping engine	E. M. Uplike, Chm. F. & W. Com.
			MISCELLANEOUS	
Pennsylvania	Eddystone	Feb. 6, 8 p.m.	Construct lockup addition to city hall	Jos. H. Griffith, Clk. of Council.
California	San Jose	Feb. 6	Constructing tuberculosis ward, county hosp. Est. cost $10,000.	Roy Walter, City Clerk.
Indiana	Michigan City	Feb. 7, 10 a.m.	Construction of docks along harbor	E. J. Heise, City Clerk.
Pennsylvania	Wilkes Barre	Feb. 10, noon	Furnish. 200 shade trees	Park Commission.
North Dakota	Grand Forks	Feb. 20	Constr. new city hall	City Auditor.

STREET IMPROVEMENTS

Aliceville, Ala.—Council has passed ordinance providing for laying of 5-ft. concrete sidewalks from 2d st. west to corporate limits along both sides of 3d ave.

Tucson, Ariz.—Territorial Engineer J. B. Girard is planning construction of hundred of miles of Territorial highway.

Chico, Cal.—Fifty-six new concrete crossings are to be laid as preliminary to the new street work which is soon to begin.—C. H. Hintz, Superintendent of Streets.

El Centro, Cal.—City is considering paving of 35,000 sq. yds.—H. B. Pearson, Jr., City Engineer.

Richmond, Cal.—City is planning to pave McDonald ave., distance about 25 blocks.—I. R. Vaughn, City Clerk.

Stockton, Cal.—Citizens have defeated proposition to issue $507,609 bonds for street work, sewers and fire department purposes.

Denver, Col.—Council will consider extension of 16th ave. through Esplanade entrance to City Park.

Washington, D. C.—An American Consul in the Far East has reported that several municipalities in his district contemplate purchasing one steam road roller each during coming year. Address No. 6131, Bureau of Manufactures.

Washington, D. C.—A firm of engineers in the Near East has obtained from local government contract to build 1,000 meters of road, and is in the market for road making tools and machinery. Address No. 6123, Bureau of Manufactures.

New Castle, Del.—Citizens will soon vote on $10,000 bonds for street improvements.

Jacksonville, Fla.—Residents of Third st., Springfield, are urging paving of that thoroughfare.

Pensacola, Fla.—Tentative plans for street paving to be done under new bond issue are now being worked out by Board of Bond Trustees.

Atlanta, Ga.—Council has appropriated $5,000 for regrading Spring st. between Walton st. and Carnegie Way.

Kooskia, Ida.—Commercial Club is considering construction of wagon road to Newsome and Elk City.

Bloomington, Ill.—Bids will soon be received by Council for paving N. Oak, Evans and W. Olive sts., 8 blocks; Poston block preferred.—Elmer Folsom, City Engineer.

Canton, Ill.—Board of Local Improvements is considering paving of East Elm st. from 3d ave. to 7th ave. at estimated cost of $9,170.14; West Olive st., $11,310.39.

Freeport, Ill.—Board of Local Improvements is planning to construct 22,000 sq. yds. of brick paving.—J. A. R. Daniels, City Clerk.

Mendota, Ill.—Construction of four-mile hard road from section 16 to township line is being considered.

Sycamore, Ill.—Citizens will vote on construction of hard roads north of town.

Mitchell, Ind.—Council has rejected all bids for four blocks of vit. brick paving on Railroad ave.; new bids will be asked.—W. H. Field, Engineer.

Mishawaka, Ind.—Paving of four avenues with bituminous macadam is under consideration.

Richmond, Ind.—Board of Public Works has adopted resolution for paving of North E street.

Indianola, Ia.—Council is considering plans for paving.

Sioux City, Ia.—Paving of portions of Pierce and Jennings sts. is being considered.

Fort Scott, Kan.—Fort Scott Industrial Association, Fort Scott, Kan., will furnish information regarding construction of 10 blocks of brick and 32 blocks of macadam paving.—J. C. Forester, Secretary.

Covington, Ky.—City Engineer Meiners has recommended resurfacing of asphalt streets.

Henderson, Ky.—Purchase of street roller is being considered by Council.

Lake Charles, La.—Council has passed four sidewalk ordinances.

Baltimore, Md.—Board of Estimates has approved plans for water-front street to be constructed in South Baltimore as drawn up by Harbor Engineer Lackey.

Lynn, Mass.—Repair of steam road rollers is being considered. Address Mayor Connery.

Wellesley, Mass.—Town has voted $2,500 for highways.

Brant, Mich.—Township will issue $10,000 bonds for construction of roads, bridges, etc.

Saginaw, Mich.—Plans will be prepared by City Engineer for improving Wadsworth st.

New Albany, Miss.—Union County will construct roads.—B. A. Webb, Highway Engineer Union County Road Commission.

Paterson, N. J.—Plans are being prepared by County Engineer Garwood Ferguson for construction of State roads in Passaic County.

Paterson, N. J.—Board of Works has decided on streets to be permanently improved this year.

Trenton, N. J.—Council has decided to pave Union st., Federal to Ferry st., with sheet asphalt on concrete base.—H. B. Salter, City Clerk.

Trenton, N. J.—State Road Commissioner Gilkyson has approved plans for third section of Seashore road, from Beesley's Point to Marshall's store, distance of seven miles, and work will soon be started.

Albany, N. Y.—Senate Finance Committee has reported favorably bill appropriating $2,500,000 to complete incomplete highways from New York to Rouse's Point.

Frankfort, N. Y.—Village has voted to pave Main st.

Niagara Falls, N. Y.—Plans have been approved by State Highway Commission for proposed Buffalo-Niagara Falls road.

Poughkeepsie, N. Y.—Paving of Hammersley ave. with macadam is being considered.

Seneca Falls, N. Y.—City has selected James W. Brennan, Geneva, to prepare plans for paving on State and Bayard Sts and to supervise all construction.

Charlotte, N. C.—City is considering election on $250,000 street bonds.—T. W. Hawkins, Mayor.

Barnesville, O.—Council has adopted resolution for paving Lincoln and Mulberry sts.—J. H. Cheney, Mayor.

Canfield, O.—Paving of Broad st. with brick is being considered.

Dayton, O.—Plans and specifications have been completed for paving Huffman ave., Third to Overlook ave., distance of more than two miles; estimated cost $85,000.

Hamilton, O.—Bids will soon be received by County Commissioners for improvement of two miles of the Venice road in Butler County.

Marysville, O.—City has sold $23,000 street improvement bonds.—J. C. Kennedy, Village Engineer.

Maumee, O.—Bids will be received Feb. 24, 8 p. m., for $10,000 bonds to improve Wayne st.—Geo. V. Roab, Village Clerk.

New Lexington, O.—Improvement of road leading to Corning with brick is being considered.

Niles, O.—Council has decided to pave Vienna ave.

Painesville, O.—Council has decided to repave Main st.

Pomeroy, O.—Plans and specifications will be prepared for paving Front st. for a distance of 5,900 ft.; estimated cost $15,000.

Richwood, O.—City is considering paving of Blagrove st. in the spring.—J. C. Kennedy, Surveyor.

Steubenville, O.—J. P. H. Henderson et al. has petitioned for construction of 3,316 ft. of pike.

Youngstown, O.—Paving of Pearl and Jackson sts. and sidewalking of Byron st. is being considered.

Elgin, Ore.—Town will replace wooden sidewalks in main part of town by concrete walks.

Forest Grove, Ore.—City will improve streets in business section with brick, wood or asphalt; residence streets will be bricked or paved with asphalt.

Marshfield, Ore.—Planking of roadway from this city to Roseburg is being considered; cost $1,500 per mile.

Oregon City, Ore.—City is considering considerable street paving.—Chas. S. Noble, City Engineer.

Silverton, Ore.—Bids will soon be received for construction of macadam road on the line known as the Silverton-Marquam road; length about five miles.

Erie, Pa.—City will soon receive bids for construction of asphalt repair plant at estimated cost of $11,000.—B. C. Briggs, City Engineer.

Trumbauersville, Pa.—Citizens will vote on $4,000 loan to improve town.

Willow Grove, Pa.—Newly organized Improvement Association will take up matter of street macadamizing and sidewalks and street lighting.

York, Pa.—Paving of Sherman st. is being considered.

Aiken, S. C.—City is considering paving of Main and other streets.

Sumter, S. C.—Sumter County Commissioners have authorized $10,000 bonds for road improvements.

Germantown, Tenn.—Town will ask permission to issue $3,000 bonds to extend pavements and install electric lights.

Kingston, Tenn.—Roane County will ask Legislature for permission to issue $100,000 bonds to extend highways.—L. B. Johnson, Chairman Good Roads Association.

Rogersville, Tenn.—Hawkins County is considering another bond issue to macadamize roads.

Dallas, Tex.—City Commissioners have ordered repaving of Jefferson st., Oak Cliff.

El Paso, Tex.—County Commissioners are planning to complete Clint-Fabens road into Fabens.

Houston, Tex.—Paving of portion of Webster ave. is being urged.

Texarkana, Tex.—Mayor John P. Kline has recommended systematic plan of street improvement; about $2,000 will be available.

Waxahachie, Tex.—Citizens will vote on $30,000 bonds for street paving.

Roanoke, Va.—Wise County has sold $100,000 road building bonds to J. L. Williams & Son, Richmond.

Brewster, Wash.—Council will consider macadamizing of streets.—W. M. Allen, Mayor.

Seattle, Wash.—Board of Public Works has approved plans for grading Meridian ave. and 5th ave. N. E.; asphalt top on 6th ave. S. and curbs and wood walks on Waters ave.

Seattle, Wash.—Board of Public Works has received following estimates: Grading and curbing 6th ave. W., $12,200; grading alley, $1,115; grading and curbing Mary ave. N. W., $850; replanking Shilshole ave., $2,100.

South Bend, Wash.—Citizens are urging paving of the main business streets of this city, as well as paving of the streets over which the new street car line between this city and Raymond will run.

Madison, Wis.—City will invest $125,000 in permanent street improvements; material used will be asphalt and brick or prepared block surface with cement foundations instead of soft sandstone macadam; all work will be done under direction of City Engineer Icke.

Marinette, Wis.—Council has decided to pave six blocks with cement this year.

New Westminster, B. C., Can.—Plans have been prepared for laying cement sidewalks on portions of 19 streets.

Victoria, B. C., Can.—City has decided to pave, curb and drain Yates st.

Sydney, N. S.—City desires more permanent paving work, but nothing definite has been done.—D. McCampbell, City Engineer.

CONTRACTS AWARDED

Huntsville, Ala.—To Blome Block Paving Co. for paving two or more streets.

Azusa, Cal.—Improving Azusa ave. and Center st., to B. R. Davisson Co., Monrovia, $35,459.

Fresno, Cal.—Building Sand Creek road, to L. S. Reed, $24,990.

Long Beach, Cal.—To Oil Macadam Paving Co., for paving Circle Park, Maine and 10th sts., $20,558.

Porterville, Cal.—To Worswick Street Paving Co., to pave Mill st. with class B paving, concrete gutters, 27c.; paving, 5c. per sq. in.; sheet iron culverts, 26c. per lin. ft.

Augusta, Ga.—Laying curbing, to Wm. F. Bowe, city, 34c. per lin. ft. for straight curb and 45c. for round; cement paving, to A. A. Hett & Co., 9½c. per sq. ft. for sidewalks and 5½c. for cement driveways; both contracts to last during year; laying necessary sewer piping, all sizes, to T. G. Brittaingam, city.

Mattoon, Ill.—To Thornton & Michaels, city, for 6,000 sq. yds. vit. brick paving on concrete foundation, $13,000.

Boston, Mass.—Mayor Fitzgerald approved contract made without advertising with Buffalo Steam Roller Co. for furnishing six-ton tandem steam roller for $2,150.

Boston, Mass.—Repairing asphalt pavement on streets having no guarantee, as ordered, from Feb. 1, 1911, to Jan. 31, 1912, to Warren Bros. Co., 59 Temple pl., $37,150.

Detroit, Mich.—By Department of Public Works, all contracts to run until Jan. 31, 1912: Iron castings, sewer grates, etc., to Co-operative Foundry Co.; furnishing receiving basin stone, to F. C. Ortman, $28.24 for blue stone; furnishing vit. sewer pipe of following sizes, 33-in., 30-in., 24-in., 12-in., 15-in. and 6-in., to J. Calvert's Sons, 145 Griswold st.; furnishing cinders for the east side of Detroit, to Garner Bros., 499 Chene st.; furnishing cinders for the west side of Detroit, to Wayne County Cinder and Supply Co., both at 55c. per cu. ft.; furnishing No. 1 and 2 cedar block, to W. E. Currie, 20 McGraw Bldg., to furnish No. 1, 40c. per sq. yd. and No. 2, 30c.; Medina stone in circles, to Orleans County Quarry Co., 5-in. stone, 38c. per lin. ft. and 6-in. stone at 44c.; for furnishing paving brick of different kinds to the following, for furnishing 1,000,000 bricks each more or less: Wassall Brick Co., Nelsonville Brick Co., Deckman Duty Brick Co., the Bessemer Limestone Co., the Wooster Shale Brick Co., the Detroit Vitrified Brick Co., the T. B. Townsend Brick and Contracting Co., the Novelty Brick and Coal Co., the Massillon S. & F. B. Co., and the Alliance Clay Product Co.; furnishing gravel, to the A. P. Weideman Co., 73 Home Bank Bldg., 1,035c. per cu. yd. on cars.

Columbia, Mo.—Paving 6th st., about 10,224 sq. yds. brick paving, to J. A. Stewart, city, $20,948.

Mt. Holly, N. J.—Graveling road from Gardner's Corners through Atsion, to Howard Mathis, New Gretna, $10,430.

Salem, N. J.—Grading, placing gravel oyster shell surface on the Mannington, Pilesgrove and Woodstown road, to Benj. L. Tuft and Frank H. Kelty, city, $26,442.

New York, N. Y.—Improving various streets, Bronx: Contract No. 4, to L. J. Moran, 562 Burnside ave., $5,240; No. 5, to Barber Asphalt Paving Co., 30 Church st., $4,718; No. 6, to Amanna & Lyons, 8 Van Cortlandt ave., $3,078; No. 7, to the Alamo Construction Co., 215 W. 125th st., $12,739.

Niagara Falls, N. Y.—Cosy Dell section Niagara Falls-Fort Erie road, to Power

Detroit, Mich.—Furnishing all paving brick required for year ending with Jan. 31, 1912; three specifications; for successful bidders, see Contracts Awarded:

Bidder, and trade name of block bid upon.	Delivered on Siding f. o. b. Cars, per M.	Delivered on Street without Guaranty, Per M.	Delivered on Street with Three Year Guaranty, Per M	Guaranteed Number of Brick Per Sq. Yd.
The Wassall Brick Company, Wassall	$20.00	$21.50	$21.50	39
Metropolitan Paving Brick Co., Canton	19.75	21.70	21.70	40
Metropolitan Paving Brick Co., Century	19.75	21.70	21.70	40
Metropolitan Paving Brick Co., Metropolitan	20.75	22.70	22.70	40
Nelsonville Brick Company, Nelsonville	19.75	21.25	21.25	40
Deckman-Duty Brick Co., Medal	20.00	21.40	21.40	40
Deckman-Duty Brick Co., D. & D	20.00	21.45	21.25	40
Deckman-Duty Brick Co., Collinwood	20.25	21.75	21.75	40
Bessemer Limestone Company, Bessemer Block	20.25	21.50	21.50	40
Wooster Shale Brick Co., Wooster	19.50	21.25	21.25	39½
Detroit Vitrified Brick Co., Champion	18.50	20.00	20.00	41
S. Zanesville S. P. & Brick Co., Bolen Brown	18.10	19.85	19.85	43
T. B. Townsend Brick & Construction Co., Townsend	19.00	20.75	20.75	40
Massillon Brick Company, Massillon	19.00	20.60	20.60	40
Novelty Brick & Coal Co., Novelty	19.00	20.75	20.75	40
Noble Brick Company, Noble	18.75	20.50	20.50	40
Saginaw Paving Brick Co., Saginaw	19.50	21.00	21.10	42
Massillon S. & F. B. Co., Massillon	19.60	21.35	21.30	40
Alliance Clay P. Co., Speedway	19.10	20.70	20.70	40
Detroit Brick & S. s. Co., Big "4"	19.00	20.75	20.75	40

City Stone Company; to Menzie & Cook, for two sections, from shipyards to Black Creek, to be completed in July; to Campaigne & Co., for two sections, extending from Slater's Point to Black Creek, to be completed in July.

Akron, O.—Construction of section 6 of the Akron-Hudson road, to Peters & Palmer, Mansfield, $69,500.33.

Lakewood, O.—Laying 2,300 sq. yds. of brick paving, to W. S. Pace, 11,207 Clifton blvd., 15c. per ft.

Urbana, O.—Building one mile of stone road in Champaign County, to H. B. Stevens, Mechanicsburg, $7,363; other bidders were: E. P. Patrick, Mechanicsburg, $7,700; T. W. Hill, Bellefontaine, $7,675; H. T. Wilson, Zenia, $7,647.

Youngstown, O.—Furnishing 50 tons of asphalt cement, to the Texas Co., $21.90 per ton.

Everett, Wash.—Grading Dist. No. 237, to Atlas Construction Co., $22,974.

Seattle, Wash.—Grading 15th ave., to Peabody Bros., 855 W. 48th st., $5,947.75; planking 40,000 ft. of sidewalks on 34th ave., to J. G. Engstrom, $16.50 per 1,000 ft.

BIDS RECEIVED

Chicago, Ill.—Sectional wood pavement, G. P. Cullen, 78 La Salle st., lowest bidder, 2,000 sq. yds. 2¾-in. pavement, $2.35; 2,000 sq. yds., 3½-in., $2.70.

Ann Arbor, Mich.—Furnishing 15,000 lbs. Portland cement, to Peerless Portland Cement Co., of Union City, Mich., $1.05 net.

New York, N. Y.—Regulating, grading, setting curb, flagging sidewalks, laying crosswalks, building approaches and placing fences in Bronxwood ave., Gunn Hill road to Burke ave., J. B. Malatesta, lowest bidder; 3,500 cu. yds. earth excavation, 10c.; 9,300 cu. yds. rock excavation, $1.30; 29,100 cu. yds. filling, 20c.; 2,950 lin. ft. new curbs, 70c.; 11,550 sq. ft. new flag, 24c.; 2,700 sq. ft. new bridgestone for crosswalks, furnished and laid, 48c.; 110 cu. yds. dry rubble masonry, in retaining walls, culverts and gutters, $1; 50 cu. yds. rubble masonry in mortar, $2; 160 lin. ft. vit. stoneware pipe, 12 ins. in diameter, $1; 25 lin. ft. vit. stoneware pipe, 15 ins. diameter, $1; 1 M ft. lumber, furnished and laid, $25; 1,900 lin. ft. new guard rail, 20c.; 100 cu. yds. concrete, $10; 4,200 lbs. steel bars, furnished and in place, 5c.; total, $26,403; totals of other bids: Perillo & Shiel, $36,880; F. Pistone, $34,396; L. C. Rose, $24,963; J. M. Rogers & Co., $36,801; Cromwell ave., Jerome ave. to Macomb's road, M. F. Maher, lowest bidder: 5,200 cu. yds. earth excavation, 39c.; 500 cu. yds. rock excavation, $1.49; 24,000 cu. yds. fill, 9c.; 4,770 lin. ft. new curb, 72c.; 19,445 sq. ft. new flag, 23c.; 760 sq. ft. new bridgestone for crosswa k, 65c.; 470 cu. yds. dry rubble masonry, in retaining walls, culverts and gutters, $1.20; 1 M ft. lumber, $1; 2,450 lin. ft. new guard rail, 19c.; total, $14,364; totals of other bids: W. McPherson, $14,816; J. C. Voorhies, $15,624; A. Cebrelli, $14,461; Seneca ave., Hunt's Point ave. to Whittier st., L. J. Moran, lowest bidder, $5,240; paving with asphalt block on a concrete foundation Grant ave., 165th st. to 166th st., Barber Asphalt Paving Co., lowest bidder; 1,604 sq. yds. completed asphalt block pavement, and keeping same in repair for five years, $1.70; 260 cu. yds. concrete, including mortar bed, $6; 180 lin. ft. new curbs, 90c.; 750 lin. ft. old curbs reset, 36c.; total, $4,719; repairing sheet asphalt pavement in Manhattan Borough as follows: (a) 270,000 sq. yds. asphalt pavement, including binder course, (b) 500 cu. yds. Portland cement concrete, (c) 1,000 sq. yds. of old stone pavement relaid, (d) totals; Barber Asphalt Co., (a) 99c., (b) $7.70, (c) 90c., (d) $272,050; Uvalde Asphalt Co., (a) 97c., (b) $7.80, (c) $1, (d) $266,800.

SEWERAGE

Attalla, Ala.—City will open bids within 30 days for construction of sewer system.

Calexico, Cal.—I. B. Funk, Imperial, has completed plans for the proposed sewer system, consisting of 14,200 ft. 6, 8, 10, 12 and 15-in. pipe sewers, 72 manholes, 10 lampholes, 10 flush tanks and 2 concrete settling tanks.

Hanford, Cal.—Town Council has adopted plans for enlargement of the sewer system, including extension of 3 miles of sewers, a settling tank with 2 chambers and extension of 1 mile of water mains for fire purposes.

Los Angeles, Cal.—Council has ordered vit. pipe sewers constructed in portions of Savannah, 4th, Saratoga, 3d, 2d, Evergreen, Fresno, Dacotah, Emmet, New Jersey, Mott, Cincinnati, Eagle and 5th sts. and Pennsylvania, Michigan, Brooklyn and Euclid aves. and East Lake blvd.

Ft. Morgan, Col.—Bids will be received about March 15 for the construction of pipe sewers, concrete for manholes and flush tanks; cost about $6,500.—H. R. Oliver, City Engineer.

Easton, Ga.—Plans are being prepared by Clyde Potts, 30 Church st., New York City, for construction of sewerage system and disposal plant.

Waycross, Ga.—Council has adopted plans for extension of sewer and water system throughout Gilchrist Park; cost about $7,000.

Plainfield, Ill.—Citizens are considering installation of sewer system.—H. D. Hallott, Aurora, Engineer.

Upper Alton, Ill.—Village Engineer B. B. Stakemiller has prepared plans for proposed sewerage system.

Clinton, Ia.—City is considering construction of sanitary and storm water sewers in spring; cost $200,000.—Reuben Hart, City Engineer.

Indianola, Ia.—Council has voted to install between four and five miles of sewers at cost of $40,000.

Dodge City, Kan.—Citizens will vote Feb. 9 on $15,000 bonds to install sewer system.

Covington, Ky.—City Engineer Weiners has recommended construction of 6 trunk sewers in various parts of city.

Cloquet, Minn.—Plans are being prepared by City Engineer E. S. Spencer for sewers to be built this season.

Melrose, Minn.—S. S. Clute, St. Cloud, is preparing plans for a sewer system to cost about $9,000; contract will be let about Feb. 15.—F. J. Weisser, City Clerk.

Gordon, Neb.—Citizens have voted bonds for construction of sewers.

Hastings, Neb.—Council has decided to construct sewerage extension in Deitz addition; length one-half mile.

Omaha, Neb.—Plans have been prepared by J. E. Bruce, Acting City Engineer, for construction of sewer system; cost about $1,051,000.

Bound Brook, N. J.—Plans are being prepared by Consulting Engineer Clyde Potts, 30 Church St., New York City, for sewage disposal works for borough.

Collingswood, N. J.—Sewerage Co. has applied to courts to have piece of land in West Collingwood condemned for site for a pumping station and electric lift, which is required to force the sewerage from low section of Collingswood to disposal plant.

Hasbrouck Heights, N. J.—Preliminary survey has been made with approximate estimate of cost for the proposed sewer system.

Trenton, N. J.—Council has decided to install sewer on Homan ave.—H. B. Salter, City Clerk.

Frankfort, N. Y.—Village has voted to issue bonds for establishment of system of sewers.

Niagara Falls, N. Y.—Residents of Ontario ave. are urging extension of sewer at cost of about $1,500.—F. S. Parkhurst, Jr., City Engineer.

Charlotte, N. C.—City is considering election on $250,000 of sewer bonds.—W. Hawkins, Mayor.

Durham, N. C.—City has asked for authority to issue $300,000 bonds for sewer construction, erection of disposal plant and improvements to streets and sidewalks.

Columbus, O.—Council has passed ordinance authorizing Service Department to make contract with Grandview Heights for furnishing of sewerage and water service to that village.

Millersburg, O.—Council has decided to construct sewers in three streets.

New Concord, O.—City is considering construction of sewer system and disposal plant in Lincoln addition.—Jas. E. Campbell, Mayor.

Pleasant Ridge, O.—Riggs-Sherman Co., The Nasby, Toledo, has been selected to prepare plans for complete sanitary sewer system, with sewage disposal plant.

Ravenna, O.—Council has passed resolutions for construction of sewers in Chestnut and Diamond sts.

Ripley, O.—Surveys have been made by City Engineer for sewer to be constructed at cost of about $5,300.—L. V. Williams, Mayor.

Sebring, O.—City is considering construction of 12 miles of sewers during year.

Struthers, O.—Council is considering advisability of constructing sewers to be one-half mile in length in Poland, Stewart and Hawthorne sts.

West Lafayette, O.—Council has decided to construct sewers to cost about $20,000.

Brownsville, Ore.—Sewer system will be constructed this year.

Portland, Ore.—Plans for installation of the Killingsworth ave. and Union ave. sewer have been completed; cost about $250,000.—J. W. Morris, City Engineer.

Portland, Ore.—Residents of Vernon District have asked Council for installation of sewer system.

Springfield, Ore.—Council has passed ordinances for construction of four sewers.

Connellsville, Pa.—Plans have been prepared by J. B. Hogg, city, for comprehensive sewage system to cost $150,000.

Danville, Pa.—Dr. Samuel Dixon, State Board of Health, has refused to approve proposed sewerage plans; Council will take action soon.

Tarentum, Pa.—Complying with order of State Board of Health that all boroughs along Allegheny River erect sewage disposal plants, Tarentum, Brackenridge, Harrison and East Deer Townships are preparing to build joint plant near Tarentum; Health and Sewer Committees of Council represent Tarentum and W. R. Almes, W. Kern and T. J. Crawford compose Brackenridge committee in charge of plans; committees representing the two townships will be chosen by Supervisors; similar joint plant is being planned by Parnassus, New Kensington and Arnold, across river from Tarentum; Springdale and Cheswick will join in building third.

Houston, Tex.—Consulting Engineer Frank L. Dormant has prepared plans and bids will soon be asked for construction of three sewers.

Seattle, Wash.—Cost of building sewer on W. 65th st. has been estimated at $14,400.

Wausau, Wis.—Bids will soon be received for construction of 60 and 72-in. pipe sewers in Sixth Ward.—B. C. Gewan, City Clerk.

New Westminster, B. C., Can.—Plans have been prepared for proposed 8th st. sewer system consisting of over 14 miles of vit. sewer pipe.

CONTRACTS AWARDED

Brawley, Cal.—To California Ornamental Brick Co., Los Angeles, for construction of system of sewers, $13,616.—A. L. Sonderegger, Central Bldg., Los Angeles, Consulting Engineer.

Monrovia, Cal.—By Board of Trustees, to R. C. Lowell, 613 South Grand ave., Los Angeles, for construction of municipal sewer system, $85,744 for sewer complete; vit. pipe will be used for all, except 24-in. which will be of reinforced concrete; quantities required, 118,600 ft. 6-in., 3,250 yds.; 10,000 ft. 8-in., 160 yds.; 65,000 ft. 10-in., 186 yds.; 3,160 ft. 12-in., 50 yds.; 1,200 ft. 14-in., 16 yds.; 4,000 ft. 16-in., 60 yds.; 9,700 ft. 24-in., 22 brick manholes; 67 flush tanks.—Olmstead & Gillilen, Wright & Callender Bldg., Los Angeles, Engineers.

Aledo, Ill.—Building sewer, to Lany & Clifford, 235 North Genessee st., Waukegan, Ill., $9,806.

Syracuse, N. Y.—Building Harbor Brook intercepting sewer; northern section to John Young Contracting Co., $88,121; southern section to Chas. T. Hookway, $101,014.

Checotah, Okla.—Construction of sewers to C. R. Nichols, Caney, Kan., $29,601; work includes 56,150 ft. 12, 10 and 8-in. vit. pipe sewers laid with cement joints, 1,320 Y branches, 90 manholes, 50 lampholes, 8 flush tanks, 40,180 cu. yds. excavation; other bidders: Midland Construction Co., Ft. Scott, Kan., $31,814; Bash & Grey, Joplin, Mo., $32,637; F. R. Stone, Oklahoma City, $32,638; Hinson Bros. & Price, Checotah, $33,331; Healy Construction Co., McAlester, $33,274; Heman Construction Co., St. Louis, Mo., $34,722; W. W. Williams, Joplin, Mo., $34,-130; E. M. Eby, Wichita, Kan., $34,348; General Construction Co., Bartlesville, Okla., $34,956; C. E. Philpot, Pine Bluff, Ark., $35,267, and H. W. Cardwell, Mena, Ark., $35,404.

BIDS RECEIVED

Syracuse, N. Y.—Building intercepting sewer, three alternatives, that is, the work is to be done in two divisions; one is north of Erie Canal and other on the south side thereof, the third alternative being for both divisions in one bid: Alternative No. 1, John Young Contracting Co., city, $88,-121; C. T. Hookway, city, $92,216.50; Gaffey & Byrnes, city, $99,594; Ryan & Reilly, Philadelphia, Pa., $112,928.15; alternative No. 2, C. T. Hookway, $101,014; John Young Contracting Co., $103,238.25; Samuel Bonn, city, $109,147; Ryan & Reilly, $141,282; alternative No. 3, John Young Contracting Co., $189,487.75.

Toledo, O.—Building sewer No. 1104, sidewalk bed of Huron st., Albert Gorzybowski, lowest bidder, 630 ft. 8-in. pipe,; 90c earth excavation; work also includes 2 manholes, 1 flush hole, 500 extra brick, etc.; total, $541.93; estimated cost, $880; only other bidder, Wm. Mahon, $761.59½.

Oklahoma City, Okla.—Sanitary lateral sewers, job, Engineer's estimate, lowest bidder and low estimate: Blocks 23, sub. 4 Dittmer Heights, $1,706.72; Swazer-McCreedie, $956.84; block 7-14 Shilling's add., $5,251.25, Reinhardt Donovan, $3,910.45; blocks 6-14-7-15, original plat Capitol Hill, $3,633.60, Reinhardt-Donovan, $2,501.58; part College Hill add., and St. Mary's Academy ground, $4,707.04, Reinhardt-Donovan, $3,553.75; block 8 original plat Capitol Hill, $944.59; Swazer-McCreedie, $644.88.

WATER SUPPLY

Blytheville, Ark.—J. E. Thompson, 241 N. 4th ave., Nashville, Tenn., will construct water works, 500,000 gals. capacity, to include pumping station to cost $2,000; also two steel towers 125 ft., with 75,000-gal. tank, and one 40 ft., with 40,000-gal. tank; install electric and coal oil engine; whole cost $60,000.—Rollan & Westover, Kansas City, Mo., Engineers.

Alturas, Cal.—Citizens have voted $35,000 bonds for the construction of water works.

Chico, Cal.—City Trustees have decided to build fire cisterns in warehouse district.

Dorris, Cal.—Citizens will vote Feb. 14 on installation of municipal water system.

Glendora, Cal.—Mutual Water Co. has appropriated $15,000 to develop a new water supply; number of wells will be sunk.

Huntington Beach, Cal.—Huntington Beach Co. has decided to construct reservoir.—A. L. Reed, Manager.

Long Beach, Cal.—Purchase of municipal water plant is being urged.

Redlands, Cal.—Bear Valley Mutual Water Co. has decided to construct a pipe line to cost about $25,000.

Redlands, Cal.—City Trustees have asked Domestic Water Co. to submit to the city proposition for the building of a high-pressure water system for business section of city.

Redondo Beach, Cal.—Redondo Water Co. will expend about $25,000 during present year in extension of mains within city.

Venice, Cal.—Citizens will soon vote on bonds to extend salt water mains.

Washington, D. C.—An engineer in city of Western Europe advises an American Consul that in case a loan which the local government has under consideration is effected a large part of the money will be devoted to public improvements; part of program of improvements will be the sinking of artesian wells; gentleman desires to be placed in communication with manufacturers of well boring machinery with view to securing agency for such lines. Address No. 6148, Bureau of Manufactures.

Fairburn, Ga.—Citizens have voted $20,000 bonds to be used for construction of water works.—W. B. Green, City Clerk.

Salmon City, Ida.—Citizens will vote Feb. 21 on $50,000 bonds for purpose of purchasing plant and franchise of Salmon City Water Works Co.

Bloomington, Ill.—Plans have been prepared by City Engineer Elmer Folsom for 6-in. water mains on Jackson st.

Herrin, Ill.—Bids will be received about April 1 for construction of a reservoir, to cost about $75,000.—R. L. Adams, Engineer; Harry Woods, City Clerk.

Lostant, Ill.—Citizens have voted $3,200 bonds for construction of water works.

Bedford, Ind.—Council has decided to install electric pumps at water works pumping station; plans and specifications prepared by W. L. Hurd, Chief Engineer of the Indianapolis water works, have been accepted; cost will be about $8,000.

Bedford, Ind.—Bids will soon be received by Bedford City Water Works for improvements to water works system; also considering constructing settling basin and reservoir.—J. W. Malott, Superintendent.

Newcastle, Ind.—Council has decided to purchase site for installation of auxiliary water plant.

Shelburn, Ind.—Installation of a modern water works system is being considered.

Canton, Kan.—Water and Light Commission is investigating the matter of constructing water works and electric light plant; cost about $30,000.

Goodland, Kan.—Commissioners have voted $10,000 for artesian well.

Many, La.—Water works and electric light system will be installed.

Patterson, La.—City has selected Fred. A. Jones Co., Houston, Tex., as Engineers in charge of construction of water works system; cost $30,000.

Dedham, Mass.—Water Co. will install $25,000 engine and a pump with capacity of 2,500,000 gals. per 24 hours and will lay a double line of main pipes on Fuller and Ames st. to High st.; cost $7,000.

Hyde Park, Mass.—Engineer Wm. S. Johnson, Board of Water Commissioners, has recommended construction of proposed filter bed addition to present water system at cost of $30,000.

Lawrence, Mass.—Water Board will consider advisability of covering old filter at cost of $55,000.

South Hadley Falls, Mass.—Board of Water Commissioners is considering $12,000 loan to provide fire protection for residents of Granby road.

Algonac, Mich.—Bids will be reecived until Feb. 6 by John H. Ihnken, Village Clerk, for $10,000 water works and $10,000 electric light bonds.

North Branch, Mich.—Construction of water works is being considered.

Easton, Minn.—Citizens have voted bonds for erection of steel tower and tank.

Hills, Minn.—Council has decided to install well.

Aurora, Mo.—City will make improvements and extensions to water system.

Columbia, Mo.—Council has authorized H. B. Shaw to prepare specifications for boring two deep wells for water and light plant.

Kansas City, Mo.—Fire and Water Board is considering construction of reinforced concrete reservoir of 400,000-gal. capacity, 120x20 ft. area, 12 ft. deep.—J. P. Tillhof, President.

Marionville, Mo.—Aurora Electric Light and Water Co. has secured franchise to construct water works; cost about $25,000.

St. Louis, Mo.—City will issue $100,000 bonds for improvements to water system outside of city limits.—Maxine Reber, City Engineer.

Gordon, Neb.—Citizens have voted water bond issue.

Grand Island, Neb.—W. K. Palmer Co., Dwight Bldg., Kansas City, Mo., has prepared plans for improvement of water and lighting system.

Louisville, Neb.—Bids will be received about March 1 for the construction of water works; cost about $16,000.—D. K. Barr, City Clerk.

Norfolk, Neb.—Preliminary plans and specifications have been prepared by W. K. Palmer Co., Kansas City, Mo., for water and lighting improvements.

Wymore, Neb.—Plans are being prepared for installation of water works.

New York, N. Y.—Commissioner Thompson, of Department of Water Supply, has asked Board of Estimate for $6,500,000 appropriation to complete easterly portion of Jerome Park reservoir of Croton Aqueduct system, construction of filtration plant being necessary to carry out plans.

Charlotte, N. C.—City is considering election on $325,000 of water works bonds.—T. W. Hawkins, Mayor.

Fargo, N. D.—Plans for new filtration plant for city have almost been completed by City Engineer Anders.

Andover, O.—Plans are being prepared for construction of brick and concrete pumping station.—L. E. Chapin, Frick Bldg., Pittsburgh, Pa., Engineer in Charge.

Cincinnati, O.—City has awarded $125,000 water works improvement bonds to Seasongood & Mayer.

East Liverpool, O.—Council has recommended election on $175,000 bonds to system wells in bed of river for better water supply.

Niles, O.—Preliminary sketch of proposed $40,000 filtration plant has been prepared.

Troy, O.—Bids will soon be received by Board of Commissioners, Miami County, for extension of the city water mains to county infirmary; estimated cost $12,000.

Monmouth, Ore.—City has levied special tax for installation of water system.

Rock Hill, S. C.—City has retained Thos. W. Cothan, Greenwood, to prepare plans and make surveys for water works and sewerage plants; cost $250,000.—B. Parks Rucker, Charlotte, N. C., Consulting Engineer.

Clarksville, Tenn.—City has retained James Nisbet Hazlehurst, Candler Bldg., Atlanta, Ga., to supervise reconstruction of water system; estimated cost $50,000.

Austin, Tex.—Council has forfeited contract that had been entered into with J. C. Dumont for rebuilding of dam.

GRAND RAPIDS, MICH.

Bids Received by the Board of Public Works, January 19, 1911, for Filtration Plant, Contract 4, Including Buildings, Filters and Equipment, Hering & Fuller, New York, Engineers

Item.	Quantity.	Engineer's Estimate.	Roberts Filter Manufacturing Co., Darby, Pa. Awarded Contract	American Water Softener Co., Philadelphia, Pa.	Carpenter & Adams Grand Rapids, Mich.	Fred. T. Ley & Co., Springfield, Mass.	Pittsburgh Filter Manufacturing Co., Pittsburgh, Pa.	N. Y. Continental-Jewell Filtration Co. New York, N. Y.	Norwood Engineering Co., Florence, Mass.
Earth Excavation	100 cu. yd.	$0.75	$0.75	$0.60	$0.50	$1.50	$0.70	$0.50	$0.75
Stone Concrete	850 cu. yd.	12.00	9.00	11.00	9.40	13.50	10.00	10.28	10.87
Cinder Concrete	10 cu. yd.	10.00	9.00	10.50	9.40	11.00	6.50	10.00	10.00
Surfacing Conc. Floors	1,100 sq. yd	.30	.40	.40	.33	.45	.32	.37	.44
Steel Reinforcement	70,000 lbs	.04	.025	.03	.03	.035	.0275	.03	.03
Structural Steel	2000 lbs	.05	.04	.039	.04	.035	.045	.04	.04
Iron Castings	3,000 lbs	.04	.05	.0325	.04	.05	.05	.035	.035
Brick Masonry	10 cu. yd.	15.00	13.50	27.00	16.40	15.00	17.00	17.00	15.00
Cement Walks	100 sq. yd.	1.75	1.10	1.08	1.00	1.40	1.10	1.15	1.10
Straight Cast Iron Pipe, Bell and Spigot	1 ton	50.00	46.00	40.00	45.00	38.00	45.00	47.00	40.00
Bell & Spigot Specials	1 ton	80.00	91.00	85.00	90.00	80.00	90.00	90.00	88.00
Flange Specials	1 ton	100.00	143.00	150.00	145.00	120.00	145.00	145.00	150.00
Ventilating Fan	Lump Sum	150.00	180.00	134.69	140.00	120.00	200.00	195.00	185.00
Filter Strainer System	Lump Sum	11,000.00	13,032.00	8,900.00	14,850.00	11,400.00	14,850.00	14,905.00	15,465.00
Filter Gravel	Lump Sum	500.00	1,188.00	341.00	1,375.00	675.00	1,375.00	1,240.00	1,210.00
Filter Sand	Lump Sum	3,600.00	4,679.00	7,432.00	5,930.00	3,200.00	5,930.00	6,000.00	5,840.00
Piping & Filter Equipment	Lump Sum	45,000.00	43,749.00	41,125.00	48,245.00	47,000.00	48,245.00	49,645.00	51,400.00
Chemical Feed Controllers	Lump Sum	5,000.00	5,678.00	4,604.00	5,500.00	4,000.00	5,500.00	6,025.00	5,820.00
Buildings	Lump Sum	56,770.00	54,000.00	58,700.00	52,796.00	61,800.00	58,000.00	57,010.00	56,921.00
Wash Water Tower	Lump Sum	8,000.00	7568.00	8,471.00	8,323.00	8,700.00	8,000.00	8,180.00	9,268.00
Venturi Meter	Lump Sum	2,300.00	2,575.00	2,313.00	2,700.00	2,000.00	2,700.00	2,610.00	2,800.00
Lime, Alum & Hypochlorite agitating devices	Lump Sum	4,000.00	3,390.00	2,295.00	4,100.00	2,400.00	4,100.00	4,000.00	3,850.00
Vacuum Cleaner	Lump Sum	1,200.00	800.00	1,286.00	654.00	1,150.00	1,175.00	1,150.00	1,290.00
Concrete Mixers & Motors	Lump Sum	3,000.00	2,460.00	2,574.00	1,749.00	2,300.00	2,700.00	2,948.00	2,840.00
Freight Elevator & Motor	Lump Sum	3,400.00	1,800.00	3,062.00	3,050.00	2,900.00	2,800.00	2,500.00	2,750.00
Bucket Elevator, Motor & Spouting	Lump Sum	2,000.00	2,100.00	3,477.00	2,117.00	1,700.00	2,200.00	2,750.00	2,800.00
Lime Crusher & Motor	Lump Sum	1,000.00	1,139.00	1,181.00	1,013.00	1,100.00	1,200.00	1,250.00	1,210.00
Trolley System	Lump Sum	1,100.00	950.00	1,286.00	790.00	1,250.00	1,525.00	1,420.00	1,400.00
Lime Solution Tanks, Troughs & Screens	Lump Sum	1,300.00	1,786.00	1,640.00	2,300.00	2,400.00	2,250.00	2,500.00	2,000.00
Hypochlorite Dissolv. Tank	Lump Sum	200.00	158.00	163.00	200.00	150.00	200.00	260.00	270.00
Wooden Baffles	Lump Sum	1,200.00	1,390.00	1,455.00	1,200.00	2,700.00	2,000.00	2,200.00	2,390.00
Totals		$165,000.00	$159,382.00	$163,323.19	$168,373.00	$172,373.00	$176,662.00	$178,929.00	$182,430.50

Gainesville, Tex.—City has sold $150,000 water works bonds to E. B. Blanton, city; work will begin at once.

Brewster, Wash.—Council will consider installation of water system.—W. M. Allen, Mayor.

Sushonnah, Wash.—Council has adopted plans by Consulting Engineer C. H. Green, Spokane, for proposed gravity water system

White Salmon, Wash.—Installation of water works system and construction of reservoir is being considered.

Watertown, Wis.—Bids will soon be asked for drilling well on west side of river.

CONTRACTS AWARDED

Brawley, Cal.—To Geo. A. Rodgers, Los Angeles, Cal., for construction of system of water works, $28,201. A. L. Sonderegger, Central Bldg., Los Angeles, Consulting Engineer.

Vallejo, Cal.—Furnishing 800 short tons of 14-in. c.-i. pipe, to U. S. Pipe Co., $30.25; total, $24,587.02; only other bidder, C. Froelich, $25,779.93.

Daytona, Fla.—Erecting water softening reservoir, to A. Vaude Vorde, $1,035.

La Salle, Ill.—To Charley Bros., city, for construction of water supply well.—Joseph Burkart, Jr., City Clerk.

New Bedford, Mass.—Supplies for Water Board: 40 tons various sizes lead pipe, to Chadwick-Boston Lead Co., $5.02 per 100 lbs.; other bidders: Bedford Boiler and Machine Co., city, $5.35; National Lead Co., Boston, $5.62½; furnishing 25 tons of best quality pig lead, to Fitz-Dana & Co., Boston, $94.42 per ton of 2,000 lbs.; other bidders: Bruce & Cook, New York, $92.80; National Lead Co., Boston, $95; Chadwick-Boston Lead Co., Boston, $93; supplying c.-i. castings, to Fairhaven Iron Foundry Co., Fairhaven, 50,000 lbs. service stop boxes and covers, 3.5c. per lb.; 30,000 lbs. gate boxes and other castings, 2.5c. per lb.; other bidder: Fuller Iron Works, Providence, R. I., 3.6c. and 2.7c. per lb.

Homer, Mich.—To T. C. Brooks & Son, Jackson, for constructing a complete system of water works; $25,000 available for this purpose.

Perth Amboy, N. J.—Furnishing engine and generator at Runyon, to Westinghouse Electric Manufacturing Co., $1,179.

Cherry Creek, N. Y.—Building water system, to E. Swanson, Jamestown; cost $30,000.

Boyertown, Pa.—To Wilhauer & Co., Pottstown, to dig tunnel in which pipes will be laid to carry water from well to borough reservoir.

Spokane, Wash.—Furnishing unit for upriver pumping plant, to Allis-Chalmers Co., $12,000.

BIDS RECEIVED

Newburg, O.—Water Works Sewer, Pavement and Construction Co., Citizens Building, Cleveland, lowest bidder for following works: 6-in. c.-i. pipe laid, 88c. per lin. ft.; 4-in. c.-i. pipe laid, 88c.; 6-in. valve and box in place, $20 each; 4-in., $14; six 4-in. "T" in place, $6 each; six 6-in., $7; 4-in. hydrant in place, $32 each; 6-in. plug in place, $1 each; extra excavation, 30c. per cu. yd.

Pittsburg, Pa.—Furnishing and erecting two pumping engines, 1,000,000-gal. pumping engine and appurtenances in Lincoln pumping station, Carpenter Co., $4,985; Snow Pump Co., $6,500; Wilson-Snyder Co., $4,650, and Hall Steam Pump Co., $5,110; 6,000,000-gal. pumping engine and appurtenances for Herron Hill pumping station, Halley Mfg. Co., $56,000; Wilson-Snyder Co., $36,580; Todd Co., $48,500; Chalmers Co., $44,967, and Bethlehem Steel Co., $47,769.

LIGHTING AND POWER

Helena, Ark.—Council has passed an ordinance granting 50-year franchise to Scofield Engr. Co., of Philadelphia, Pa., prospective purchaser of the plant of Herena Gas Co.

Jackson, Cal.—John L. Henry has been granted 50-year franchise by the Board of Supervisors to erect and operate electric system.

Live Oak, Cal.—Sutter County Supervisors will call meeting for purpose of deciding on formation of lighting district.

San Bernardino, Cal.—Street lighting contract for city, which expires on March 1, cannot be continued under private contract with company which holds it now, according to opinion rendered to Council.

Ukiah, Cal.—Snow Mountain Water and Power Co. is arranging for extensive improvements and extensions to its system.—W. S. Graham, General Superintendent.

Willows, Cal.—Northern California Power Co. is considering establishment of high pressure gas plant.

Carbondale, Col.—Board of Trustees has granted to Aspen Light Co. franchise to supply electricity for lamps and motors for 20 years; company agrees to supply electricity at 20c. per kw. hour, with minimum charge of $2.

Erie, Col.—Plans are being considered for enlarging municipal electric light plant; equipment will consist of a new boiler, larger generator and installation of heating plant.

Fowler, Col.—Council has granted to Pueblo and Suburban Traction and Lighting Co., Pueblo, 10-year franchise to supply electricity for lamps and motors; transmission lines will be extended to this city at once.

Greenwich, Conn.—Housatonic Electric Lighting Co. has appropriated $100,000 for construction of gas producing and distributing plant.

Milton, Del.—N. W. White, of Georgetown, is interested in construction of plant to furnish electric light and power.

Washington, D. C.—American Consular officer in South America has reported that extensive land owner in his district intends to install a small water power electric lighting plant on one of his plantations and desires from American manufacturers estimates on dynamo and pelton wheel, coupled together, of sufficient size and strength to supply 40 16-c.p. incandescent lamps; also desires in addition to this estimates to include cost of wiring and fixtures and lamps, Mazda preferred; person has within 100 yards of his home waterfall of 150 ft., stream being large enough to fill 5-in. pipe, and two miles distant another waterfall of 250 ft. of sufficient volume to fill an 8-in. pipe. Address No. 6170, Bureau of Manufactures.

Glen Ellyn, Ill.—Spalding Electric Co. will install 150-h.p. boiler and two generators in the near future.—Carl S. Spalding, Manager.

Mt. Olive, Ill.—Extensive additions and improvements are considered for municipal electric plant, including installation of additional water tube boiler with rating of from 200 to 300 h.p. generator and engine.—O. A. Voepel, Manager.

Saybrook, Ill.—R. C. Cooper is considering installation of plant to supply electricity in Saybrook, Arrowsmith and Gibson City.

Virginia, Ill.—Virginia Light, Heat and Power Co. will make improvements to plant, including installation of 150-h.p. Frost boiler and a 200-h.p. engine.—Roy Ray, Manager.

Knightsville, Ind.—Town Board is considering plans for installation of electric light system; electricity to operate the system will probably be supplied by the Terre Haute, Indianapolis and Eastern Traction Co.—Joseph A. McGowan, Secretary.

Dodge City, Kan.—Citizens will vote Feb. 9 on $25,000 bonds for installation of electric light plant.

McPherson, Kan.—Council is negotiating with the city of Inman on project of running a line from McPherson to Inman to carry current for city lighting purposes there, connecting with new electric plant; similar negotiations are also being made with Canton and Galva.—A. J. Shaw, Superintendent.

Spring Hill, Kan.—Citizens have voted $6,000 bonds to build electric light plant.

Nicholasville, Ky.—Plans are being considered for installation of a 150-h.p. boiler and a 75-h.p. steam engine in municipal electric light plant.—E. J. Glass, Manager.

Many, La.—Electric light system and water works will be installed.

Ellicott City, Md.—Patapsco Electric and Mfg. Co. is considering installation of a gas producer and gas engines.—Otto Wunder, Superintendent.

Franklin, Mass.—W. H. Fritchman, Boston, has petitioned Board of Selectmen for gas franchise.

Grand Rapids, Mich.—Grand Rapids Gas Light Co. is planning to expend $40,000 on extension of mains.

Tower, Minn.—Council is considering changing of power at municipal lighting plant from steam to water power.

Biloxi, Miss.—C. H. Evans Engineering Co., 145 Van Buren st., Chicago, has prepared plans for 7-mile wrought iron pipe extension of gas main for Gulf Coast Gas Co.

Pascagoula, Miss.—F. Lynn Brown, Chicago, has asked franchise for installation of gas plant, mains, etc.

Marionville, Mo.—Aurora Electric Light and Water Co. is planning construction of electric plant.

Gordon, Neb.—Citizens have voted bonds for electric lights.

Grand Island, Neb.—Plans and specifications have been prepared by the W. K. Palmer Co., 717-720 Dwight Bldg., Kansas City, Mo., for improvement of lighting and water system and construction of new power plant.

Norfolk, Neb.—W. K. Palmer Co., Dwight Bldg., Kansas City, Mo., has prepared preliminary plant for lighting and water improvements.

Wymore, Neb.—Plans are being prepared for installation of light plant.

Salem, N. J.—Salem Electric Co. will soon extend service to Lower Penn's Neck, Mannington and Quinton Townships.

Columbus, O.—Council is considering resolution asking City Engineer to prepare estimate of cost of placing overhead wires underground in territory bounded by Livingston ave., Front st., Fifth ave. and Fifth st.

Madisonville, O.—Installation of 100-kw, 2,200-volt, direct-connected unit in the municipal electric light plant in the near future is being considered.—D. H. Fisher, General Manager.

Arlington, Ore.—City is considering installation of electric light plant.

Homer City, Pa.—Installation of electric light plant is being considered; company has already been formed by J. A. Stokes, C. A. Simons and W. P. Graff.

Wilkes Barre, Pa.—Wilkes Barre Light Co. will soon commence construction of plant.—J. A. Murray, 54 Public Square, Consulting Engineer.

Willow Grove, Pa.—Newly organized Improvement Association will take up matter of street lighting.

Gettysburg, S. D.—Council has granted franchise to John McMaster and D. J. O'Keefe to install gas lighting system.

Germantown, Tenn.—Town will ask permission to issue $3,000 bonds to install system of electric lights and extend pavements.

Celina, Tex.—Celina Electric Light and Power Co. has been granted francnise for construction of electric light plant.

Madisonville, Tex.—C. C. Murray & Sons have been granted franchise for construction of electric light plant; will organize Madisonville Light and Power Co.

Nacogdoches, Tex.—Installation of municipal light plant is being considered.

Plainview, Tex.—H. E. Powell, of Springfield, Ill., will install gas plant; Council has been asked for a franchise for proposed distributing system.

Sherman, Tex.—Chairman Hopson of Fire Committee has recommended purchase of 1,500 ft. of more fire hose.

Fredericksburg, Va.—C. P. Burkwyn, President Rappahannock Power and Light Co., Richmond, has applied to Council for electric light franchise.

Spokane, Wash.—Washington Water Power Co. is planning to supply town of Creston and Wilbur with light through 35-mile extension from Davenport.

Tacoma, Wash.—Metropolitan Park Board has decided to call for bids immediately for equipment to light Wright Park, including installation of the necessary ornamental poles, wiring, lamps, etc.

Baraboo, Wis.—Jas. Dickie, Geo. McArthur, Sr., and Geo. McArthur, Jr., have organized Merchants' Power & Light Co., to install water power for purpose of generating dry current.

Wausau, Wis.—Board of Public Works has been authorized to secure plans for municipal electric light plant.

CONTRACTS AWARDED

Willows, Cal.—To North California Power Co., two-year contract for installing and maintaining 20 arc lights at $6 per light.

Marion, Ind.—Furnishing current for street lights, to Marion Light and Heating Co.

Morristown, N. J.—Five-year contract for street lighting of Morris Township, to Morris and Somerset Electric Light Company; contract stipulates that electric company shall furnish seventy or more lights at rate of $18 a lamp per annum, lamps to be at least 25 candle power; company further agrees to extend its lines without charge to township.

FIRE EQUIPMENT

Los Angeles, Cal.—Fire Commission has asked $1,800 appropriation for purchase of hose from New Jersey Car Spring and Rubber Co., Jersey City, N. J.

Stockton, Cal.—Citizens have defeated proposition to issue $507,609 bonds for fire department and other purposes.

Georgetown, Del.—Council has ordered purchase of several hundred ft. of hose for Fire Department.

Jacksonville, Fla.—Mayor Wm. S. Jordan is urging need of fire boat.

Fort Wayne, Ind.—Board of Safety will purchase 1,000 ft. of hose this year and same amount each succeeding year.

Newcastle, Ind.—Council has decided to purchase site for erection of fire department headquarters.

Lexington, Ky.—Special Committee on Fire Apparatus will recommend purchase of new auto machines.

New Orleans, La.—City will establish hose company at Upperline and Laurel sts., steam engine company at Upperline and Freret sts., steam engine and hook and ladder truck company on Louisiana ave.

Boston, Mass.—Mayor Fitzgerald has announced that auto chemical will soon be installed at foot of Price Hill.

New Bedford, Mass.—Fire Department committee has rejected all bids received for furnishing 5,000 ft. of cotton rubber lined hose; new bids will be received Feb. 8, 7.15 p. m.—E. F. Dahill, Chief.

Southbridge, Mass.—Firemen will ask for establishment of fire alarm service; purchase of auto truck is also being considered.

Detroit, Mich.—Erection of engine house in vicinity of Gratiot and Harper aves. is being considered.

Saginaw, Mich.—Board of Water Commissioners will recommend to Council purchase of two auto fire engines for emergency cases; at present time east side water works are inadequate and situated several miles from the center of distribution.

Eveleth, Minn.—City Property Committee is considering erection of fire hall.

Kansas City, Mo.—City is considering purchase of two two-way fire autos to hold chemical tanks and 1,000 ft. of hose.—J. L. Porter, Mayor.

Butte, Mont.—Council is considering erection of fire station on Harrison ave.

Grenloch, N. J.—Fire department has been formed.—Jos. W. Bright, Chief.

Lorraine, N. J.—Installation of fire alarm system is being considered.—Geo. H. Horning, Mayor.

Nutley, N. J.—Purchase of 1,000 ft. of hose and auto fire engine and installation of six fire alarm boxes is being considered.

Hudson, N. Y.—Council is considering need of better equipment for fire department.

Larchmont, N. Y.—Town is considering election on $5,000 bonds for installation of modern fire alarm system.

Port Jervis, N. Y.—Mayor C. N. Knapp has recommended installation of fire alarm system.

Streeter, N. D.—Installation of chemical engine is being considered.

Elyria, O.—Council has voted in favor of auto combination engine and hose truck, new fire station and fire and police fire alarm system.

Astoria, Ore.—Fire Chief Foster has recommended purchase of automobile combination chemical engine and hose wagon; installation of storage battery system on fire alarm, purchase of a 600-gal.-per-minute pump to be placed on steamboat to protect water front.

Lebanon, Pa.—Perseverance Hose Co. is considering purchase of combination chemical and hose wagon.

Wilkes Barre, Pa.—Fire Chief Schuler has recommended erection of fire house, overhauling of hook and ladder truck, purchase of triple combination auto engine, also combination auto hose and chemical truck.

Pawtucket, R. I.—Erection of fire station at Sayles and West aves. is being considered.

Howard, S. D.—Howard Fire Co. is considering erection of fire house.

Memphis, Tenn.—Fire Chief John E. McFadden will ask for $75,000 expenditure for improvements, including erection of three engine houses and purchase of hook and ladder truck, 16 horses and other minor equipment.

Manchester Center, Vt.—Purchase of hand engine is being considered.

Seattle, Wash.—Board of Public Works has adopted plans for erection of fire station at 10th ave. S. and Southern st., South Park.

Sheridan, Wyo.—Plans have been prepared for erection of fire station.

Port Arthur, Ont., Can.—Council is considering the purchase of motor trucks for fire department. J. J. Carick can be addressed.

CONTRACTS AWARDED

Battle Creek, Mich.—Furnishing 70-h.p. auto chemical and hose wagon, to Seagrave Co., Columbus, O., $5,500.

Akron, O.—Furnishing combination fire truck and chemical automobile, to L. J. Fritch, $22,724.95; other bidders: Webb Motor Co., $2.950; Kanawah Chemical Co., Pittsburg, $3,200; Speedwell Motor Co., of Dayton, $3,250; the car ordered will be constructed by the Cadillac Motor Car Co., of Detroit.

Hazleton, Pa.—Mayor F. L. Smith will sign contract awarded by Councils to Robinson Fire Apparatus Co. for auto-chemical and hose wagon.

BRIDGES

Los Angeles, Cal.—Revised plans and specifications for Arroyo Seco bridge between Garvanza and the ostrich farm have been presented to Board of Supervisors by County Surveyor Noble and bids advertised for building structure.

Wilmington, Del.—Levy Court is planning to erect $150,000 bridge across Christiana River.—Jas. Wilson, County Engineer.

Fernandina, Fla.—Board of County Commissioners is considering construction of bridge across Nassau River.—W. T. Waas, Chairman.

Rockford, Ill.—City Engineer Hand has completed plans for reinforced concrete bridge; cost $65,000.

Bedford, Ind.—Lawrence County will ask for bids in spring for construction of two bridges; cost $4,000 and $1,200, respectively.—W. H. Field, Mitchell, Engineer.

Michigan City, Ind.—Council has passed ordinance appropriating $16,500 for repairing and reconstructing Franklin st. bridge.

Rockville, Ind.—Spencer County will soon ask bids for erection of bridge over Big Raccoon River at Arnnesburg.

Washington, Ind.—Daviess County is considering construction of bridges near Washington; cost $8,000.—George Faith, 307½ E. Main st., Engineer; Thomas Nugent, County Auditor.

Atchison, Kan.—Construction of a bridge over Missouri River at Commercial st. is being considered; cost about $300,000.

South Portland, Me.—Rebuilding of present bridge across Portland Harbor is being considered.

New Augusta, Miss.—Perry County Board of Supervisors has asked bids for repair of Wingate bridge on Leaf River damaged by flood.

Independence, Mo.—County Highway Engineer R. T. Proctor will prepare plans for erection of viaduct of stone or concrete over Chicago and Alton Railroad tracks on 15th st. road.

Joplin City, Mo.—Council has instructed Engineer J. B. Hodgdon to prepare estimates on construction of concrete culverts over Willow Branch on Jackson ave., on Moffet ave. and on Joplin st.

Niagara Falls, N. Y.—Bids will soon be asked for the construction of ornamental bridges over Fisher's Creek, Black Creek, Miller's Creek and Fisherman's Creek; supervision of all work is under Superintendent John H. Jackson, of Queen Victoria Park.

Schenectady, N. Y.—Erection of bridge over Cotton Factory Hollow at Craig st. is being urged.

Cincinnati, O.—Council is considering ordinance for $250.000 bond issue for construction of Gilbert ave. viaduct.

Wilson, Pa.—Residents of this borough are urging erection of bridge across Monongahela.

Memphis, Tenn.—City is planning construction of steel and reinforced bridge, by railway companies, on McLemore ave.—J. H. Weatherford, City Engineer.

Lampasas, Tex.—Commissioners' Court will consider election on bonds for erection of bridge.

Spokane, Wash.—Complete plans for grade separation at 1st ave. and Sheridan st. have been furnished by City Engineer Morton Maccartney; plans involve a concrete trestle over Milwaukee, Spokane and Inland and Great Northern-Northern Pacific transfer tracks and new steel or concrete bridge over Spokane River on Olive ave. just west of Dakota st; entire improvement is to cost $348,000 or $363,000.

Mayville, Wis.—Town will let contract next month for construction of concrete or single desk girder bridge across Rock River; cost $10,000. H. S. Mann, Town Clerk.

Milwaukee, Wis.—Plans for new Oneida st. bridge have been submitted to Maj. Bromwell, Resident Government Engineer, city.

Superior, Wis.—County Board has decided to construct bridge over Middle River.

St. Catharines, Ont., Can.—The Mayor has recommended construction of high-level bridge.

CONTRACTS AWARDED

Indianapolis, Ind.—Building concrete bridge over canal at College ave., to Volpp & Fritz, $6,417.

Natchitoches, La.—By Police Jury for building two bridges across Flat River near Powhattan, to Boydston & O'Quin, $1,100.

New York, N. Y.—To Charles Meades & Co., 299 Broadway, New York, for constructing elevators, stairs, drainage, ornamental and electric work for anchor piers of the Queensboro Bridge over East River, $57,300.

Portland, Ore.—Constructing substructure of bridge over Willamette River from plans of Ralph Modjeski, Consulting Engineer, 1750 Monadnock Blk., Chicago, Ill., to the Union Bridge Co., of Kansas City, Mo., $557,646; other bidders were: Missouri Valley Bridge and Iron Co., Leavenworth, Kan., $565,923; Bates & Rogers Contracting Co., Chicago, Ill., $648,287; Porter Bros., city, $685,561; Pacific Bridge Co., city, $707,180.

MISCELLANEOUS

Birmingham, Ala.—Jefferson County is considering election on $50,000 bond issue to erect wing to Hillman hospital.

Gadsden, Ala.—Plans will be received at once by L. L. Herzberg, Judge of Probate Court, for erection of $25,000 jail for Etowah County.

Mobile, Ala.—In yearly budget sum of $50,000 has been set aside for construction of steel warehouse.

Union Springs, Ala.—Erection of $10,000 Carnegie hospital is being considered.

Los Angeles, Cal.—Wilbur D. Cook, Jr., Wright & Callender Bldg., is preparing plans for landscaping and improving Agricultural Park; work will include sunken gardens, fountains, walks, pergolas, colonnades, etc.; cost will be over $100,000.

Dover, Del.—Establishment of uniformed police force is being considered.

Douglas, Ga.—Coffee County is considering erection of three-story addition to jail.—D. Yaskin, County Commissioner.

Jonesboro, Ga.—Frank M. Manson desires names and addresses of manufacturers of dump body or dump wagon; Everett preferred.

Macon, Ga.—Council will consider resolution providing for establishment of a public playground on Tattnall Square Park, in connection with other improvements contemplated for square; playground will be equipped with outdoor gymnasium devices.

Bloomington, Ill.—Citizens of Bloomington and Normal Townships will vote on creation of Park Board which is to have charge of construction of inter-city parkway drive and water system along course of Sugar Creek.—Wm. R. Bach, Park Commissioner.

Vincennes, Ind.—Mayor Jas. D. McDowell has recommended purchase of auto patrol.

Cedar Rapids, Ia.—Council has decided to erect jail and town hall.

Arlington, Kan.—Purchase of city park and erection of auditorium is being urged.

New Orleans, La.—System of lakes and lagoons for St. Charles ave. end of Audubon Park, and made in accordance with the plans of Landscape Engineer Olmstead, Boston, is being considered for near future; rough estimates on the excavation work alone place cost at figures ranging between $50,000 and $80,000.

Cambridge, Mass.—Board of Aldermen has voted to establish police station.

Holyoke, Mass.—Plans have been prepared by Architects Ellsworth & Howes for erection of $10,000 tuberculosis hospital.

Lawrence, Mass.—Board of Aldermen has adopted order authorizing Mayor Cahill to appoint committee of six to consider erection of city hall.

Lawrence, Mass.—Mayor Cahill is favorable to establishment of garbage incinerator.

Saginaw, Mich.—Board of Police Commissioners has asked committee from Council, composed of Aldermen Buetenschoen, Button and Trier, to instruct City Engineer to prepare outline plans and estimated cost for modern jail.

St. Joseph, Mo.—Council has appropriated $4,000 for purchase of combination auto patrol and ambulance.—A. P. Clayton, Mayor.

Merrill, Wis.—Plans by Foeller & Schober, Green Bay, have been accepted for erection of $38,000 jail.

CONTRACTS AWARDED

Ft. Wayne, Ind.—Hauling city garbage, to D. C. Wilburne.

Dexter, Me.—Building $7,000 todwn hall, to Fred M. Young, city.

Fall River, Mass.—Collecting garbage for five years, to J. T. Reagan, $44,400; other bidders: Benjamin W. Brown, $47,350; Arthur M. Reed, $47,845; Christopher B. Hicks and James H. Gildard, $55,706.40; Willard C. Gardiner, $50,000; A. H. Barney, $53,000; Isaac E. Willetts, $56,000; Frank Riley, as manager of the Eastern Sanitary Product Co., $47,900, and Charles N. Menard, $60,000.

Watertown, N. Y.—To O. B. Colwell for the collection of the city's garbage.

Marlin, Tex.—Erection of brick crematory, to R. S. Winn, Hobart, Okla., $1,250.

Norfolk, Va.—Building police headquarters at Avon and Cove sts., to S. M. Richardson & Son, Haupton, $44,273.

Whitehall, Wis.—Building jail, to Van Dorn Iron Works Co., Cleveland, O., $3,300.

BIDS ASKED FOR

State	City	Received Until	Nature of Work	Address inquiries to
			STREET IMPROVEMENTS	
Virginia	Norfolk	Feb. 6, noon	Construct macadam roadway	County Clk. Norfolk Co.
Minnesota	St. Paul	Feb. 6, 2 p.m.	Grading and macadamizing various streets	Board of Pub. Works.
New York	Albany	Feb. 6, 3 p.m.	Removal of street dirt	Isidore Wachsman, Secy. Bd. C.&S.
California	Huntington Bch.	Feb. 6	Constr. one mile petrolithic pave, curb and sidewalk	J. C. Fountain, Engr.
California	Chico	Feb. 7, 7:30 p.m.	Construct 50 street crossings	B. F. Hudspeth, City Clerk.
Washington	Waterville	Feb. 7, 9 a.m.	Constr. approx. 8½ miles impro. highway	County Auditor.
California	Santa Ana	Feb. 8, 11 a.m.	Furn. 1,000 bbls. road oil and 1,000 bbls. residium	W. B. Williams, County Clerk.
Maryland	Baltimore	Feb. 8, 11 a.m.	Furn. cement, stone (crushed), sand, gravel, brick, lumber	Bd. of Awards, c.o J. S. Thomas.
Ohio	Cincinnati	Feb. 24, noon	Resurf. Independence st., also culvert and fill on Mt. Alverno rd	Fred Dreihs, Clk. Co. Comrs.
Ohio	Cincinnati	Feb. 8, noon	Imp. McAlpin ave. with grade, curb and gutter., also furn. 400 tons refined asphalt	John J. Wenner, Clk. Pub. Serv.
New Jersey	Elizabeth	Feb. 15, 8:30 p.m.	Excav. 5,440 cu. yds. earth and construct curb, flag, etc.	John F. Kenah, City Clerk.
Michigan	Ludington	Feb. 20, 4 p.m.	Pave various streets	Dean Thompson, City Clerk.
Minnesota	Worthington	March 13, 2 p.m.	Grade approx. 10,066 yards	E. C. Pannell, Co. Aud.
			SEWERAGE	
Minnesota	St. Paul	Feb. 6, 2 p.m.	Constr. sewers on various streets	Board of Pub. Works.
Minnesota	St. Cloud	Feb. 6, 4 p.m.	Constr. concrete wall at sewer outlet	Earl C. Scott, City Clerk.
Washington	Toppenish	Feb. 6, 8 p.m.	Construct 15,000 ft. of 7 to 16 in. pipe sewer	W. H. Hassig, City Clerk.
Alabama	Uniontown	Feb. 13, 8:15 p.m.	Constr. sewage disp. plant and sewer, incl. approx. 1,840 lin. ft. 15 in., 3,000 ft. 12 in. 7,500 ft. 10 in., 15,200 ft. 8 in. pipe	J. L. Pope, Town Clerk.
Iowa	Signourey	Feb. 14	Constr. sewerage system, 8, 10, 12 and 15-in pipe., approx. 9 miles, also disposal works	J. H. Wyllie, Mayor.
South Dakota	Dell Rapids	Feb. 15, 7:30 p.m.	Constr. main and lateral and connect. sewers	Oluf Hegge, City Auditor.
Iowa	Mt. Vernon	Feb. 21, 4 p.m.	Constr. 7½ mile sanitary sewer, 6 to 15 in., pipe, with septic tank and filter beds	Wm. E. Gamble, Town Clerk.
			WATER SUPPLY	
North Dakota	Fargo	Feb. 6	Constr. water purif. plant, and furn. one vertical and one horizontal pump. engine and gas producer pump. plant	F. L. Anders, City Engr.
Wyoming	Sheridan	March 6, 7:30 p.m.	Constr. 14 and 10 in. water pipe line	J. J. Withrow, City Clerk.
			LIGHTING AND POWER	
New York	Albany	Feb. 6, 3 p.m.	Lighting street lamps five years from June 21	Isidore Wachsman, Secy. Bd. C.&S.
			FIRE EQUIPMENT	
Minnesota	Duluth	Feb. 3, 3 p.m.	Furn. auto, comb. chem. and hose wagon, 70 to 80 h.p. with ladders and hooks	John Connelly, Secy. Bd. of F. Comrs.
			MISCELLANEOUS	
Maryland	Baltimore	Feb. 8, 11 a.m.	Furn. Linden trees for parks, and various park dept. supplies	Board of Awards.
Oklahoma	Mangum	Feb. 14, 7 p.m.	Erect city hall and fire station	City Clerk.
Washington	Spokane	Feb. 17, 2 p.m.	Furn. 1 five pass'gr. elec. auto	John Gifford, City Purch. Agt.

STREET IMPROVEMENTS

Oak Park, Ill.—Village is considering paving of Erie st.

Woodstock, Ill.—Town is considering paving of the Square.—H. M. Price, 140 Dearborn st., Chicago, Engineer. Lynn Richard, Town Clerk.

Delphi, Ind.—City is considering paving of four streets.—E. E. Kirkpatrick, City Engineer.

Evansville, Ind.—Residents of East Blackford av. are urging paving of that thoroughfare with asphalt; City Engineer Pfafflin will prepare estimate.

Fairfield, Ia.—City is planning to pave six to ten blocks with brick.—J. P. Starr, Mayor.

Lowellville, O.—Mayor Robert Erskin has recommended paving of number of streets.

Point Gray, B. C., Can.—Ratepayers have authorized $350,000 expenditure on road improvements.

CONTRACT AWARDED

Dustin, Okla.—Laying concrete sidewalks to Ardmore Concrete Co., Ardmore.

SEWERAGE

Alameda, Cal.—Council has decided on plan of building proposed big Alameda st. storm drain system.

Sawtelle, Cal.—City Trustees have decided to defer action on bond issue proposed for storm and sanitary sewer system.

Stockton, Cal.—Citizens have defeated proposition to issue $507,609 bonds for sewers, street work and fire department purposes.

Nevada, Ia.—Engineer Samuel Steigerwart, Boone, will prepare plans for installation of sewer system.

Preston, Minn.—Village is considering construction of tile pipe, gravity sewer system at cost of $5,000.—O. H. Case, Fountain, Engineer; G. A. Love, Mayor.

Red Wing, Minn.—City is considering extension of sewer at cost of $9,000.—A. E. Rhome, City Engineer; A. P. Pierce, Mayor.

Lowellville, O.—Mayor Robert Erskin has recommended immediate construction of proposed sanitary sewer system.

WATER SUPPLY

Preston, Minn.—Village is considering extension of water main at cost of $1,500.—G. A. Love, Mayor.

Red Wing, Minn.—City is considering extension of water mains at cost of $4,000; bids on c. i. pipe, gate valves, etc., will be received about Mar. 1.—A. E. Rhome, City Engineer; A. P. Pierce, Mayor.

Point Pleasant, N. J.—Establishment of municipal water plant is being considered; present plant is owned by Martin Maloney, of Philadelphia.—Councilman G. H. McCloskey is interested.

Muskogee, Okla.—Citizens will vote Feb. 16 on $650,000 bonds to improve water and sewerage systems and construct garbage incinerator.

Lynchburg, Va.—Fire Chief W. L. Sandidge has recommended extension of 12-in. water main on Jefferson st. and also 16-in. main.

Snohomish, Wash.—Citizens have voted $110,000 bonds to build gravity water system for Pilchuck River.

Porcupine City, Ont., Can.—Plans are being considered for installation of water system.

Toronto, Ont., Can.—Construction of water mains at cost of $161,544 has been recommended.

LIGHTING AND POWER

Mammoth Springs, Ark.—The Mammoth Springs Electric Co. is considering installation of a 100-kw. generator and constructing 28 miles of high-tension transmission lines, carrying 33,000 volts; preparations are being made by the company to furnish electricity for lamps and motors in five towns.—E. C. Bellamy, Mgr.

Lincoln, Ill.—Lincoln Water and Light Co. is considering a change to 60-cycle, 3-phase and increasing capacity within the next six months.—E. MacDonald, Manager.

Palestine, Ill.—City proposes to install new generator at municipal light plant in the spring; also install about six miles of new wire.—H. T. Loughrey, Chairman Light Committee.

Belvidere, Ill.—Council has granted Public Service Operating Co., Belvidere, 10-year franchise for street lighting.

FIRE EQUIPMENT

Bridgeport, Conn.—Erection and equipment of fire house in Ninth District is being considered.

South Bend, Ind.—Board of Safety is preparing to ask Council to pay $7,000 to $8,000 for an automobile chemical wagon for Fire Department.

Valparaiso, Ind.—City is considering installation of auto apparatus.. Aldermen Zea, Alexander and Gast are interested.

Sioux City, Ia.—Fire Chief Geo. M. Kellog and Superintendent of Public Safety R. S. Whiteley will recommend purchase of motor-propelled engine.

Baltimore, Md.—Fire Chief Horan is visiting various cities on lookout for auto supply wagon and auto hose wagon desired for department.

Everett, Mass.—City will build station for a hose company.

Escanaba, Mich.—Citizens will vote Feb. 6 on $15.000 bonds for erection of fire house in Seventh Ward.

Manchester, N. H.—Board of Aldermen will consider $5,500 order for establishment of flying squadron.

West Orange, N. J.—Necessity of auto apparatus is urged in annual report of Fire Chief.

BRIDGES

Louisville, Ky.—City Engineer D. R. Lyman has recommended erection of $15,000 bridge over Beargrass Creek at Logan st.

Brownsville, Pa.—Board of Viewers of Fayette and Washington counties have selected site for joint county bridge over Monongahela River.

Johnstown, Pa.—Council has decided on $40,000 loan to build bridge and approaches from Iron st. to 5th ave.

Houston, Tex.—Bids will be asked at once for construction of proposed Main st. viaduct.—H. B. Rice, Mayor.

Spokane, Wash.—City is considering issuance of bonds to build concrete bridges over Latah creek.

Marinette, Wis.—Plans have been prepared by Thos. R. Hasley, Grand Rapids, for erection of concrete bridge across Menominee River.

Proposal Advertising Municipal officials will serve their constituents well by seeing that PROPOSALS FOR MUNICIPAL IMPROVEMENTS of all kinds are inserted in

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